

# Kukudocs HTML5 Viewer Introduction

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# Contents

- Why do you need to change your viewer?
- What is a HTML5 viewer?
- Why KukuViewer?
- Advantages of KukuViewer
- Main features of KuKuViewer
- Challenges and competitiveness
- Messenger office: Viewdit

# Why do you need to change your viewer?



## Change in the browser environment

### • Non Active X

- ActiveX-based applications are vulnerable to security risks, as ActiveX is no longer supported.
- The government also recognizes the risks of ActiveX and has decided to remove all ActiveX applications by 2017



## Change in the user environment

### • Windows 10

- The first Windows OS that does not support ActiveX
- ActiveX-based applications can no longer be used



## Change in the work environment

### • Real-time collaboration

- The means of communication at work shifted from e-mail to real-time messenger.
- A slow viewer application is not suitable for real-time collaboration.



## Change in security awareness

### • Security

- Installing a viewer application to replace ActiveX-based program violates most organizations' security policy.
- Downloading a document to open it in a viewer is a violation of most security policies.

# What is a HTML5 Viewer?

Existing viewers for Word, Excel or Power Point go through a complicated process of downloading the original file, converting it and displaying it as an image.



## Image Viewer



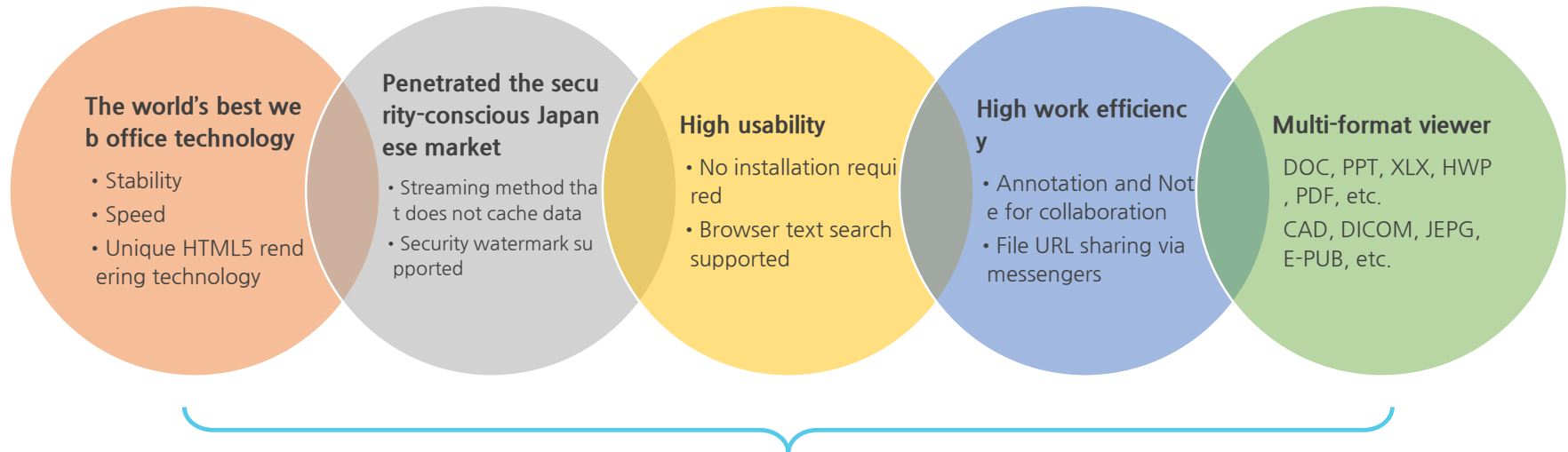
## HTML5 Viewer

Speed	Very slow	Fast
Concurrent users	High load on the server compared to the number of concurrent users	No load (KukuDocs), Average (Company S, Company G)
Identicalness	Same as the original (captured image)	Can be different (Converts the original file into a web browser format)
Quality	Depends on the quality of the captured image (resolution)	Depends on the viewer's engine filter
Usability	Low	High (Text search, Google web translation)
Security	Average	High
Expandability	None	Easy to build an EDMS (Electronic Document Management System) Indexing and file search supported

# Why KukuDocs HTML5 Viewer?

KukuDocs proved its technology capabilities with KukuDocs Office, which was a great threat to competitors. Now, we proudly present the KukuDocs HTML5 Viewer.

There is no tricky quality degradation to maintain the speed like other viewers. You can even translate your document using the 'Google translate,' because the viewer maintains the text structure.



## Kukudocs HTML5 Viewer

# Advantages of KukuViewer

KukuViewer helps you save software license and security cost, while improving work efficiency.

<b>Save PC software cost</b>	The office filter, developed by KukuDocs, removes the need to purchase any office software license	When you need to make changes, simply download KukuDocs Viewdit
<b>Reduce security expenses</b>	Data is stored in the volatile memory, keeping your documents safe.	Security watermark supported
<b>Increase efficiency of work</b>	We offer the fastest speed, and there's no need to install multiple programs	Open and view a document in any device including PC, mobile and smart TV
<b>Increase productivity</b>	HTML5 enables flexibility to work seamlessly with workflows of existing solutions	

# Main features of KukuViewer

- Whether it is an image file, CAD, DICOM, PSD or AI, view it in the web browser without any additional installation.

## Image Viewer



- View office files (DOC, PPT, XLS, etc.) as well as HWP, E-PUB, PDF, and ODF simply on the web.

## Document Viewer



- The filter converts a document with tables to HTML format as close to the original as possible..

## Document Filter



- Document revision control and annotation features make collaboration easier

## Collaboration



- Streaming method downloads one page at a time and deletes it from cache as the next page is loaded, rather than downloading the entire file on the computer

## Streaming method



- KukuViewer can run on any device with a browser. You can use the find bar to search for text or translate the document using 'Google translate' in the browser.

## Browser functionality



- Documents and files converted to HTML can be used for building EDMS data base.

## EDMS (Electronic Document Management System)



- The original document is not stored in the computer, but displayed only, preventing security risks from ransomwares

## Security



- Convert the document on the viewer into PDF

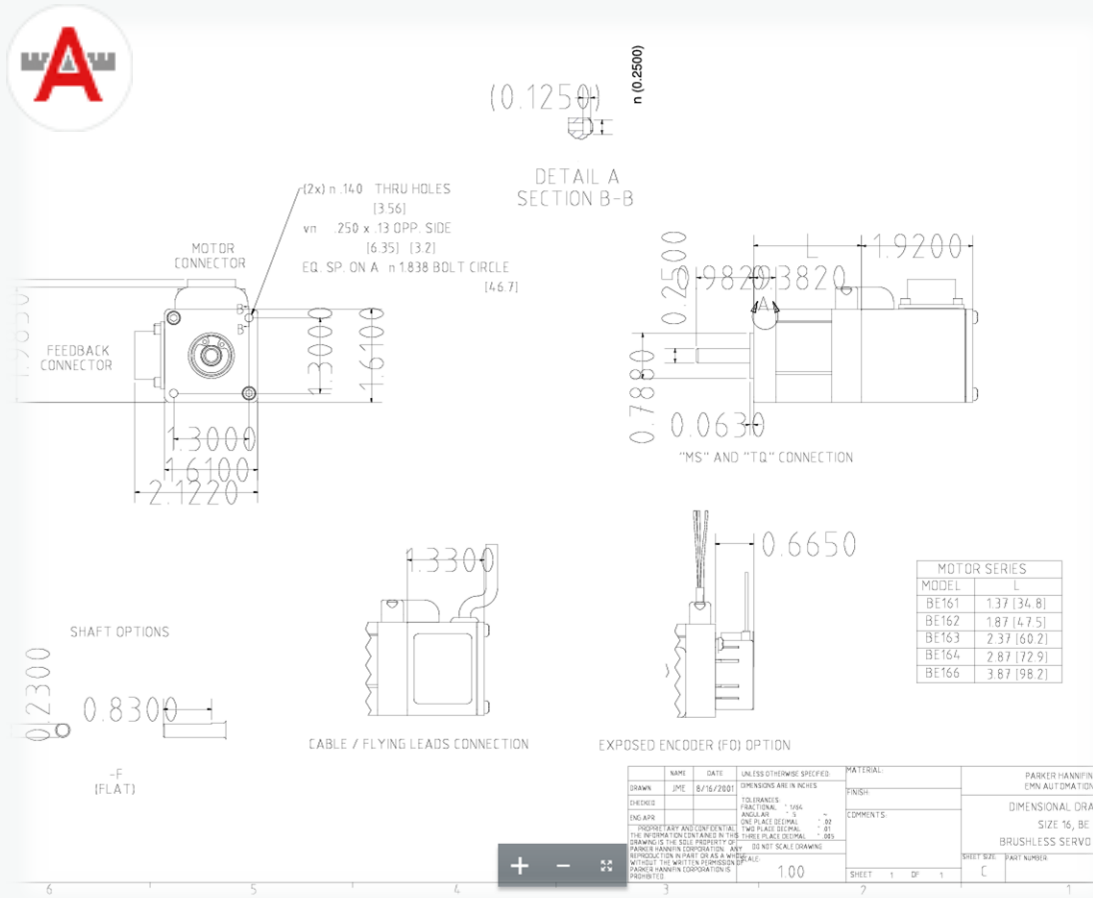
## PDF conversion



# Image Viewer

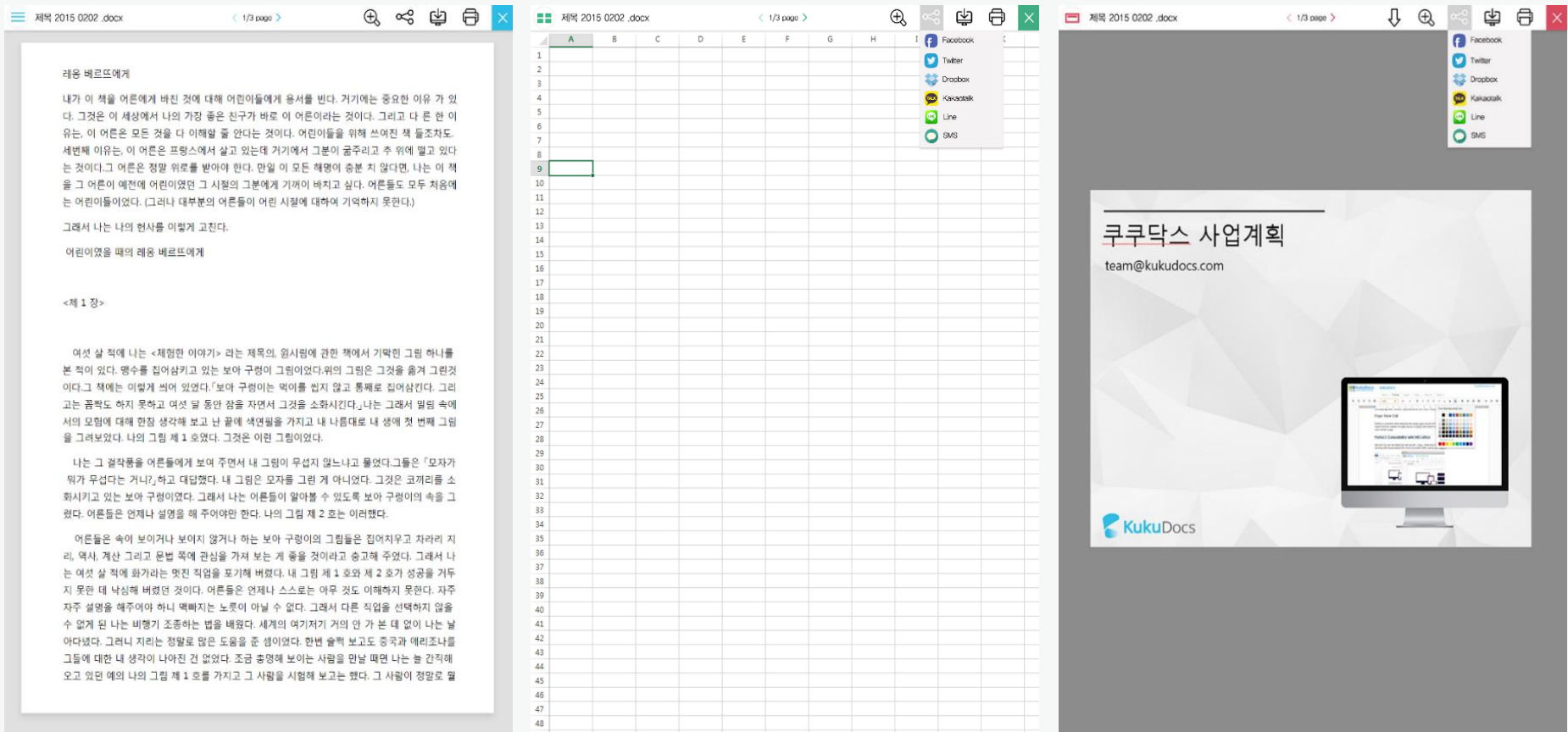


## Image Convert Viewer





# Document Viewer



HTML5 Viewer - [Fast conversion speed](#) / [extensible with web services](#) / accessible from any device

Files (doc, docx, xls, xlsx, ppt, pptx, e-pub, pdf, hwp or hwpX) are [converted into HTML format](#).

The Document Viewer based on KukuDocs' [unique technology](#) does not require customers to purchase MS Office, Hangul or other office programs.

# Document filter

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申請			
メーカ名	事業者登録番号		
アドレス	電話番号		
代表			
申請のWebサイトのアドレスhttp://www.			
認証申請の区分	[]の最初の認証の申請をするとき [V]有効期間の満了、再認証の申請をするとき		
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（社）韓国障害者団体総連合会韓国ウェブアクセシビリティ認証評価院長



Office 2013

웹 접근성 품질인증 심사신청서 (1) ☆

File Edit View Insert Format Tools Table Add-ons Help Last... Comments Share

75% Normal text Times He... 12 More

웹 접근성 품질인증 심사신청서

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주소	전화번호		
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인증신청구분	[] 최초 인증 신청일 [V] 유효기간 만료, 재인증 신청일		
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申請			
メーカ名	事業者登録番号		
アドレス	電話番号		
代表			
申請のWebサイトのアドレスhttp://www.			
認証申請の区分	[]の最初の認証の申請をするとき [V]有効期間の満了、再認証の申請をするとき		
申請機関の性格			
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申請者（代表者）		（署名または人）	
（社）韓国障害者団体総連合会韓国ウェブアクセシビリティ認証評価院長		お客様	
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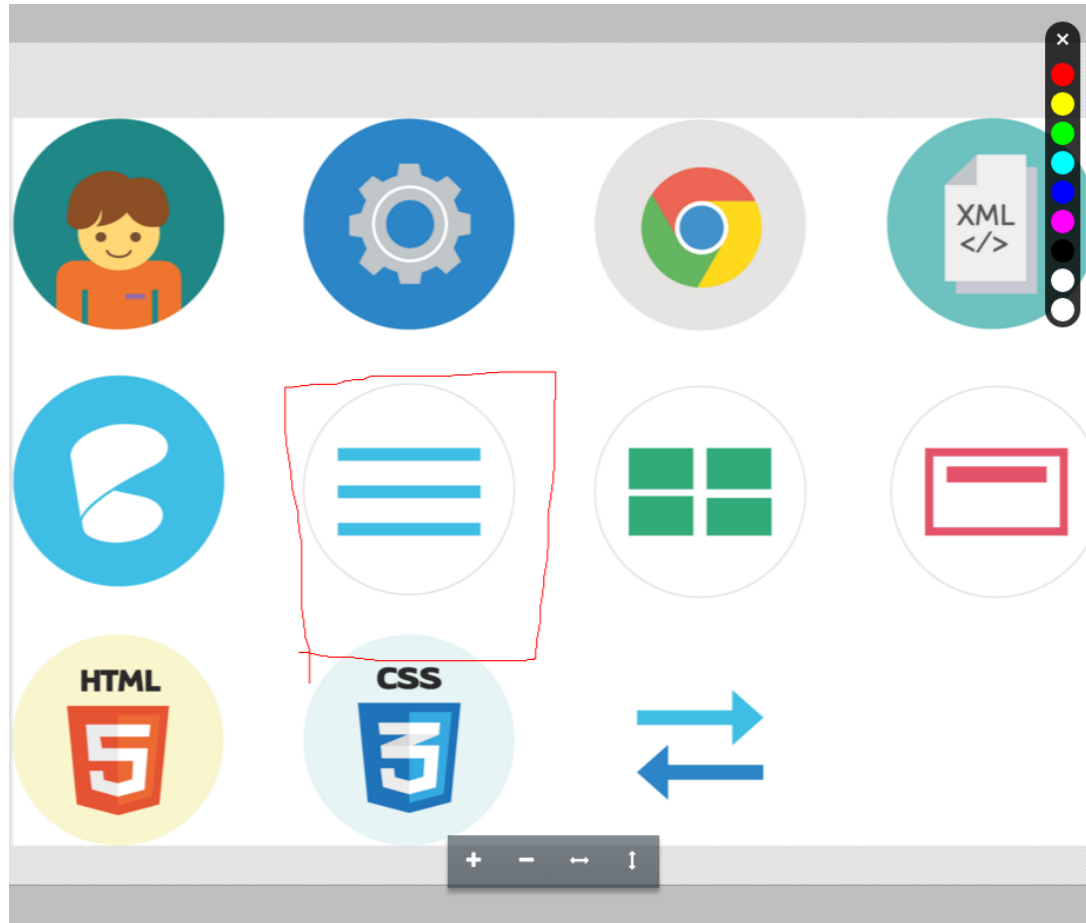


Kukudocs

Many viewer programs fail to display documents in double-byte languages like Korean, Chinese and Japanese or those with tables correctly and properly.

KukuViewer uses the document filter, flagship feature of Kukudocs Office, to display characters and tables better than Google and other competitors.

# Collaboration



You can communicate with colleagues in real-time on the same image or document using Annotation and Drawing features. [\(Collaboration features will soon be available\)](#)

## Streaming

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1 / 14

## Trace-based Just-in-Time Type Specialization for Dynamic Languages

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## Abstract

Dynamic languages such as JavaScript are more difficult to compile than statically typed ones. Since no concrete type information is available, traditional compilers need to emit generic code that can handle all possible type combinations at runtime. We present an alternative compilation technique for dynamically-typed languages that identifies frequently executed loop traces at run-time and then generates machine code on the fly that is specialized for the actual dynamic types occurring on each path through the loop. Our method provides cheap inter-procedural type specialization, and an elegant and efficient way of incrementally compiling lazily discovered alternative paths through nested loops. We have implemented a dynamic compiler for JavaScript based on our technique and we have measured speedups of 10x and more for certain benchmark programs.

Categories and Subject Descriptors: D.3.4 (Programming Languages): Processors — Incremental compilers, code generation.

General Terms: Design, Experimentation, Measurement, Performance.

Keywords: JavaScript, just-in-time compilation, trace trees.

## 1. Introduction

Dynamic languages such as JavaScript, Python, and Ruby, are popular since they are expressive, accessible to non-experts, and make deployment as easy as distributing a source file. They are used for small scripts as well as for complex applications. JavaScript, for example, is the de facto standard for client-side web programming

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 PLDI'09, June 15–20, 2009, Dublin, Ireland.  
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and is used for the application logic of browser-based productivity applications such as Google Mail, Google Docs and Zimbra Collaboration Suite. In this domain, in order to provide a fluid user experience and enable a new generation of applications, virtual machines must provide a low startup time and high performance.

Compilers for statically typed languages rely on type information to generate efficient machine code. In a dynamically typed programming language such as JavaScript, the types of expressions may vary at runtime. This means that the compiler can no longer easily transform operations into machine instructions that operate on one specific type. Without exact type information, the compiler must emit slower generalized machine code that can deal with all potential type combinations. While compile-time static type inference might be able to gather type information to generate optimized machine code, traditional static analysis is very expensive and hence not well suited for the highly interactive environment of a web browser.

We present a trace-based compilation technique for dynamic languages that reconciles speed of compilation with excellent performance of the generated machine code. Our system uses a mixed-mode execution approach: the system starts running JavaScript in a fast-starting bytecode interpreter. As the program runs, the system identifies hot (frequently executed) bytecode sequences, records them, and compiles them to fast native code. We call such a sequence of instructions a trace.

Unlike method-based dynamic compilers, our dynamic compiler operates at the granularity of individual loops. This design choice is based on the expectation that programs spend most of their time in hot loops. Even in dynamically typed languages, we expect hot loops to be mostly type-stable, meaning that the types of values are invariant. (For example, we would expect loop counters that start as integers to remain integers for all iterations. When both of these expectations hold, a trace-based compiler can cover the program execution with a small number of type-specialized, efficiently compiled traces.)

Each compiled trace covers one path through the program with one mapping of values to types. When the VM executes a compiled trace, it cannot guarantee that the same path will be followed or that the same types will occur in subsequent loop iterations.

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10 / 143

## Chapter 5

## Breakfast

I quickly followed suit, and descending into the bar-room accosted the grinning landlord very pleasantly. I cherished no malice towards him, though he had been skylarking with me not a little in the matter of my bedfellow.

However, a good laugh is a mighty good thing, and rather too scarce a good thing; the more's the pity. So, if any one man, in his own proper person, afford stuff for a good joke to anybody, let him not be backward, but let him cheerfully allow himself to spend and to be spent in that way. And the man that has anything bountifully laughable about him, be sure there is more in that man than you perhaps think for.

The bar-room was now full of the boarders who had been dropping in the night previous, and whom I had not as yet had a good look at. They were nearly all whalemens' chief mates, and second mates, and third mates, and sea carpenters, and sea coopers, and sea blacksmiths, and harpooners, and ship keepers: a brown and brawny company, with bosky beards: an unshorn, shaggy set, all wearing monkey jackets for morning gowns.

You could pretty plainly tell how long each one had been ashore. This young fellow's healthy cheek is like a sun-toasted pear in hue, and would seem to smell almost as musky: he cannot have been three days landed from his Indian voyage. That man next him looks a few shades lighter: you might say a touch of satin wood is in him. In the complexion of a third still lingers a tropic tawn, but slightly bleached withal: he doubtless has tarried whole weeks ashore. But who could show a cheek like Queequeg? which, barred with various tints, seemed like the Andes' western slope, to show forth in one array, contrasting climates, zone by zone.

"Grub, ho!" now cried the landlord, flinging open a door, and in we went to breakfast.

They say that men who have seen the world, thereby become quite at ease in manner, quite self-possessed in company. Not always, though: Ledyard, the great New England traveller, and Mungo Park, the Scotch one; of all men, they possessed the least assurance in the parlor. But perhaps the mere crossing of Siberia in a sledge drawn by dogs as Ledyard did, or the taking a long solitary walk on an empty stomach, in the negro heart of Africa, which was the sum of poor Mungo's performances—this kind of travel, I say, may not be the very best mode of attaining a high social polish. Still, for the most part, that sort of thing is to be had anywhere.

These reflections just here are occasioned by the circumstance that after we were all seated at the table, and I was preparing to hear some good stories about whaling; to my no small surprise nearly every man maintained a profound silence. And not only that, but they looked embarrassed. Yes, here were a set of sea-dogs, many of whom without the slightest bashfulness had boarded great whales on the high seas—entire strangers to them—and duelled them dead without winking; and yet, here they sat at a social breakfast table—all of the same calling, all of kindred tastes—looking round as sheepishly at each other as though they had never been out of sight of some sheepfold among the Green Mountains. A curious sight! these bashful bears, these timid warrior whalemens!

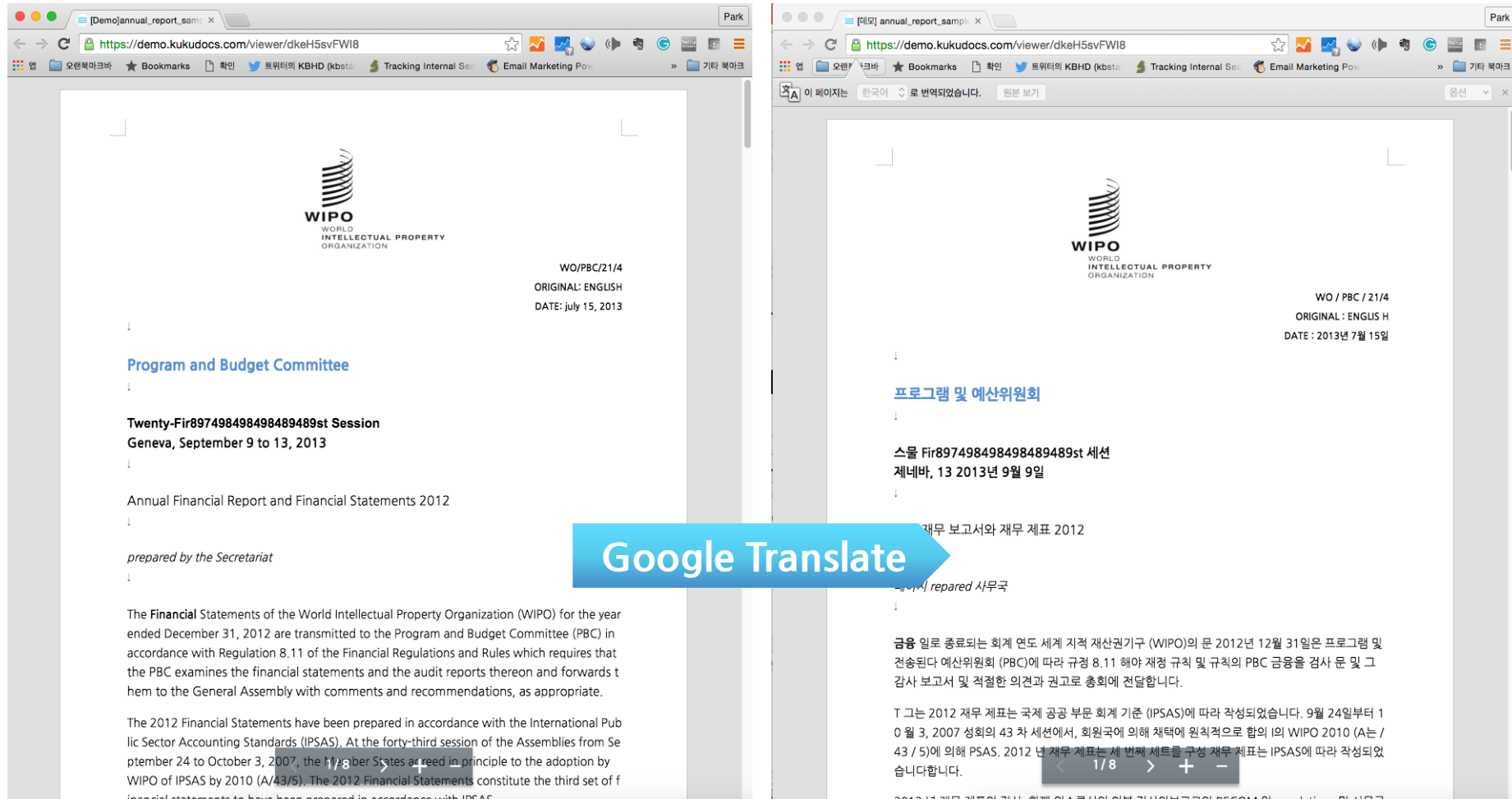
But as for Queequeg—why, Queequeg sat there among them—at the head of the table, too, it so chanced: as cool as an icicle. To be sure I cannot say much for his breeding. His greatest admirer could not have cordially justified his bringing his harpoon into breakfast with him, and using it there without

When there is a document with multiple pages, the **streaming method downloads one page at a time**, rather than downloading the entire file on the computer

After reading a page, **you can delete the data from cache**

Available for all image and certain document format (ppt, pptx, pdf, e-pub, xls, xlsx)

# Browser functionality



Open a document or an image on any device such as PC, Mac, mobile, tablet or smart TV. All you need is a browser application. In case of other companies, you need to purchase a separate viewer application for each device. In addition, KukuViewer keeps the text structure of the original file, allowing customers to use the find bar to search for text or translate the document in the browser.

# EDMS expandability



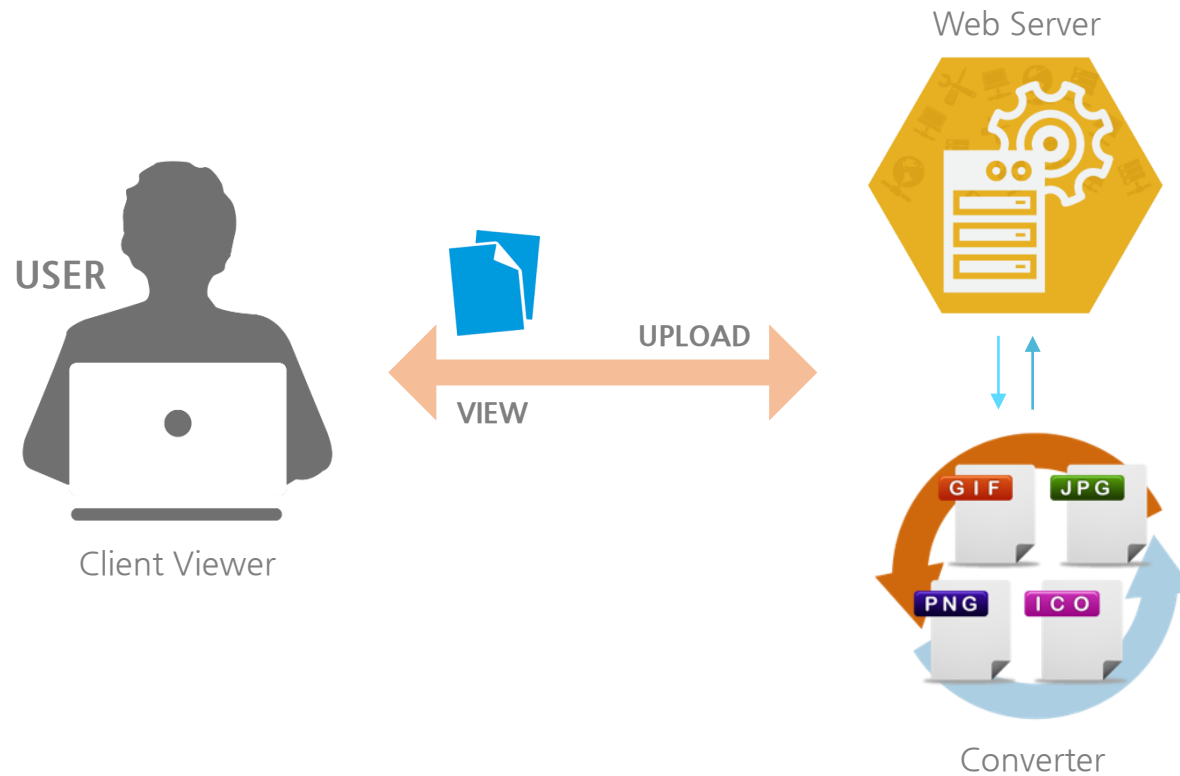
Users can save the **format** and **images** of a **document** separately since the Document Viewer is HTML based.

Documents can be easily indexed using meta tags.

Unlike the existing archiving method, KukuViewer does not generate duplicate images every time a file is accessed from the database, allowing customers to keep their system fast and simple.

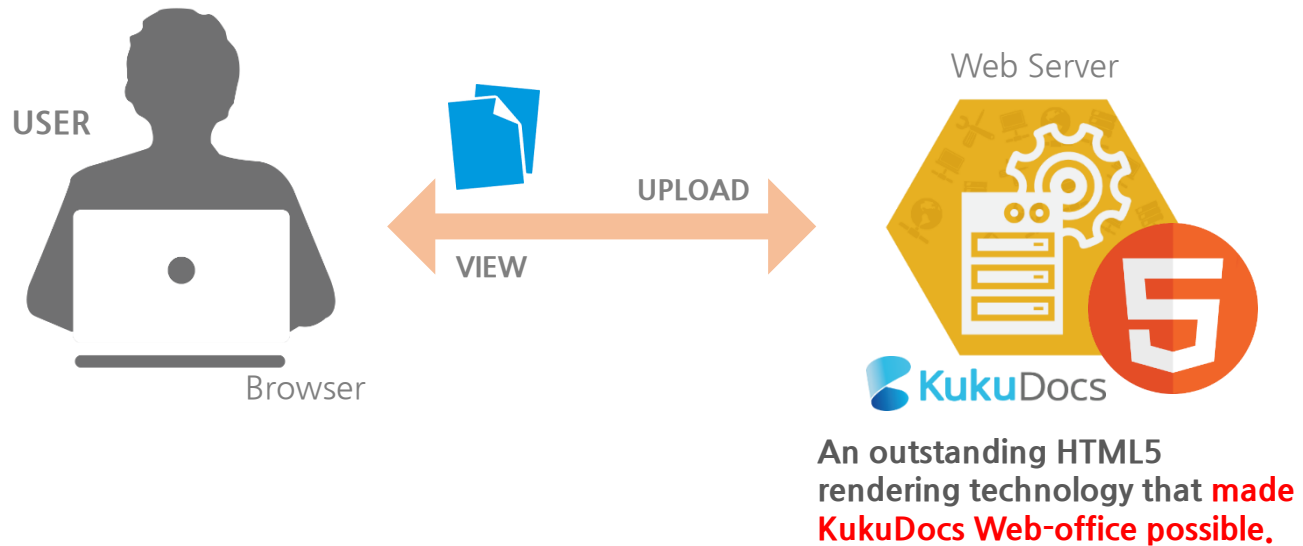
## Challenges: Loading Speed & Concurrent user

Other ActiveX-based viewers and image viewers take long time and crash when there are too many concurrent users because they convert files on the web server before downloading them.



# Competitiveness

- Loading speed and Concurrent user



KukuViewer's HTML5 engine technology renders a file directly to HTML5 without converting it from the server.

When accessing files from online or cloud service, users can experience extraordinary speed with KukuViewer. Unlike other HTML5 viewers that convert the entire document in the server before downloading it, KukuViewer renders it in real-time, reducing the load on the server and supporting significantly higher number of concurrent users.



# Competitiveness

- Competitive landscape

Types	Format	Description	Google	Company H	Company S	Kukudocs
document	.docx	Microsoft Office Open XML	O	O	O	O
	.doc	Microsoft Word	O	O	O	O
	.doc6	Microsoft Word 6	X	X	X	O
	.doc95	Microsoft Word 95/2000	X	X	X	O
	.odt	Open Office Word	O	X	X	O
	.ott	Open Office Template	X	X	X	O
	.rtf	Rich Text Format	O	O	X	O
	.txt	Text	O	X	O	O
	.sdw	StarWriter 5.0	O	X	O	O
	.sxw	Open Office 1.0	O	X	X	O
	.hwp	Hancom Office	X	O	O	O
	.hwpX	Hancom Office XML	X	X	X	O
spreadsheet	.xlsx	Microsoft Excel XML	O	O	O	O
	.csv	CSV	O	O	X	O
	.xls	Microsoft Excel 97/2000/XP	O	O	O	O
	.xls5	Microsoft Excel 5	X	O	X	O
	.xls95	Microsoft Excel 95	X	O	X	O
	.xlt	Microsoft Excel Template	O	X	O	O
	.ods	Open Office Spreadsheet	O	X	X	O
	.xltx	Microsoft Excel Template	O	X	O	O
presentation	.pptx	Microsoft PowerPoint XML	O	O	O	O
	.ppt	Microsoft PowerPoint 97	O	O	O	O
	.odp	OpenOffice Presentation	O	X	X	O
DICOM	.dcm	The Digital imaging and Communications in Medicine	X	X	X	O

# Competitiveness

- Competitive landscape

Types	Format	Description	Google	Company H	Company S	Kukudocs
PDF / Epub	.pdf	Portable Document Format	X	O	O	O
	.epub	IDPF/EPUB	O	X	X	O
graphics	.psd	Adobe Photoshop bitmap	O	X	X	O
	.ps	PostScript	X	X	X	O
	.ai	Adobe Illustrator	O	X	O	O
	.dxf	AutoCAD Drawing	O	X	X	O
	.dwg	AutoCAD Drawing	X	X	X	O
image	.png	Portable Network Graphic	O	O	O	O
	.jpg	Joint Photographic Experts	O	O	O	O
	.gif	Graphics Interchange	O	O	O	O
	.bmp	Windows Bitmap	O	O	X	O
	.emf	Win Enhanced Metafile	X	X	X	O
	.eps	Encapsulated PostScript	O	X	X	O
	.pct	pct	O	X	O	O
	.pgm	pgm	X	X	X	O
	.svg	Scalable Vector Graphics	X	X	X	O
	.ico	icon	O	X	X	O
	.wmf	Windows Metafile	X	X	X	O
	.tiff	Tagged Image File Format	O	X	O	O
	.tif	Tagged Image File Format	O	X	X	O
	.ppm	Portable PixMap	X	X	X	O
	.pbm	Portable bitMap	X	X	X	O
	.orf	Olympus (digital camera) Raw image Format	O	X	X	O
	.nef	Nikon Electronic Format for raw image	O	X	X	O
	.pef	Pentax Electronic Format for raw image	O	X	X	O
	.arw	Sony Alpha Raw Files	O	X	X	O
	.cr2	Canon raw image	O	X	X	O

# Competitiveness

- Based on HTML5

	Image-based Viewers	Kuku Viewer
Conversion server	Requires a conversion server	Not required
License	MS Office/HWP/font license required	Not required
Google translation	Impossible	Possible
Viewing method	Active-X / Image or PDF base	KukuDocs engine / HTML5 base
Quality vs. speed	Quality degradation is inevitable for higher speed	High quality
Extensibility	Impossible	DRM document viewing, extension feature Active Chart
E-book	Partially supported	E-pub to HTML conversion supported
Archiving & indexing	Separate system is required for indexing and archiving	Archiving and indexing features supported

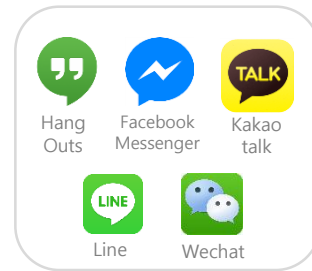
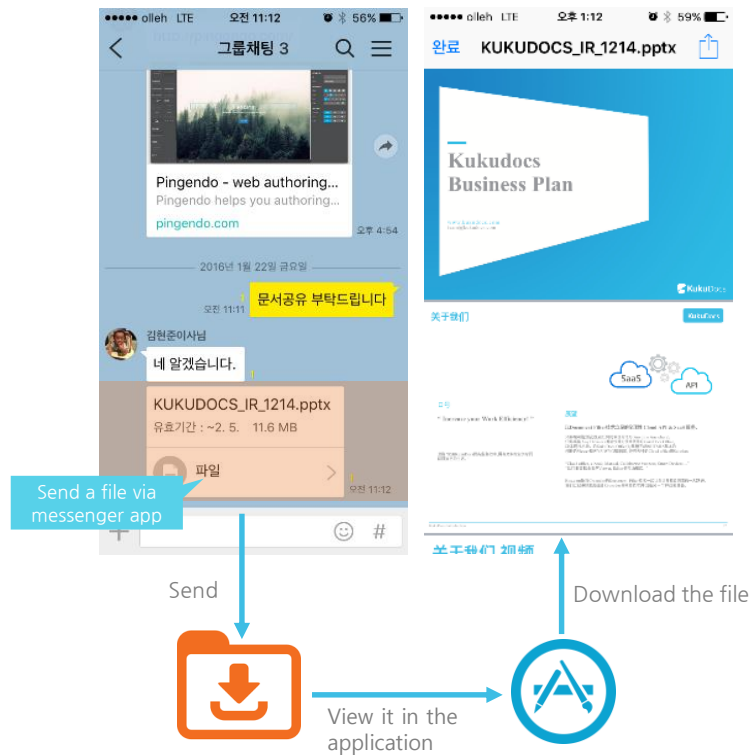
KukuViewer does not require an additional conversion server nor does it require office software licenses because files are converted through the KukuDocs filter.

HTML5 enables high quality outcome and maintains the original text structure, allowing users to run 'Google translate' from the Viewer.

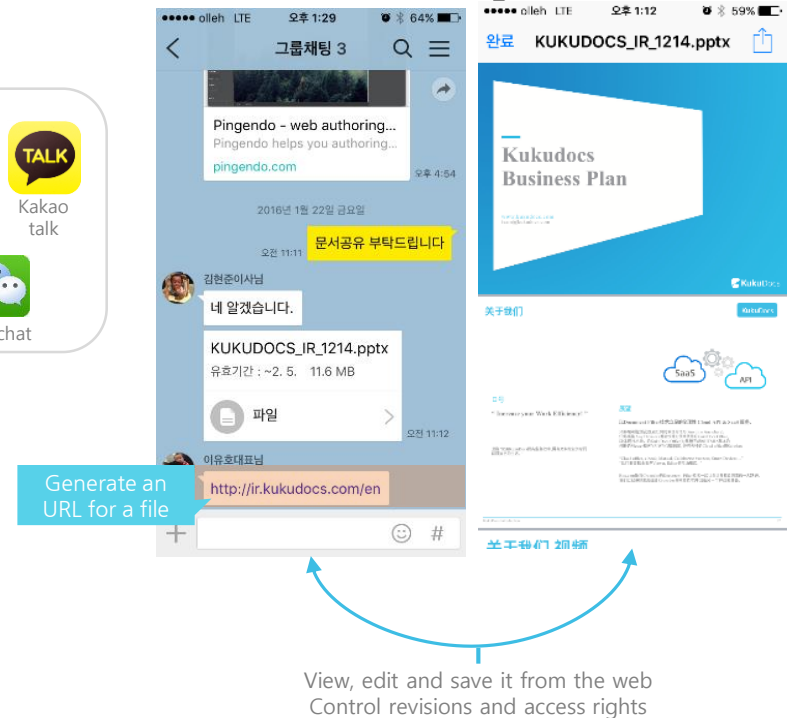
# Messenger office - Viewdit

Messenger office - Viewdit solves fundamental security issues that arise when sharing a file via Slack, Kakao Talk, WeChat and other messengers. Users can view and edit a document **without downloading or opening it from an app**. In particular, edit features are optimized for the mobile environment.

## Workflow using a messenger app



## Workflow using KukuDocs

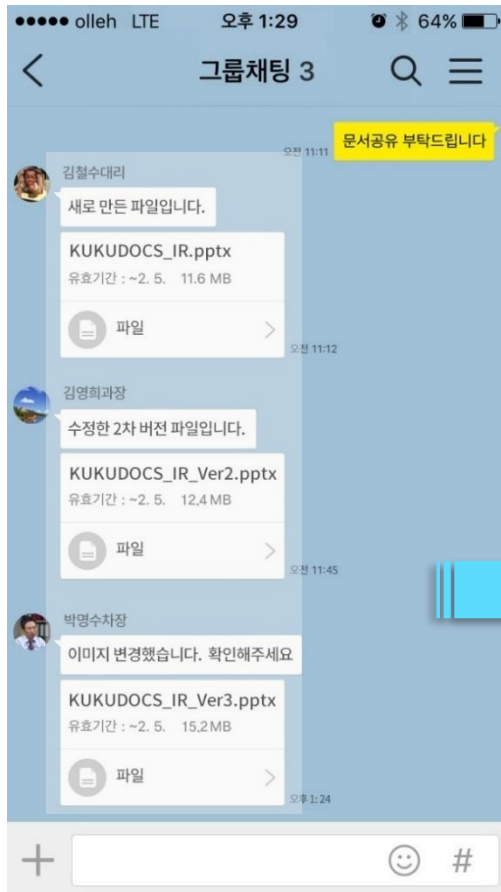


What is Messenger office? An office program that allows users to edit and alter documents sent via messenger application without using a third-party application.

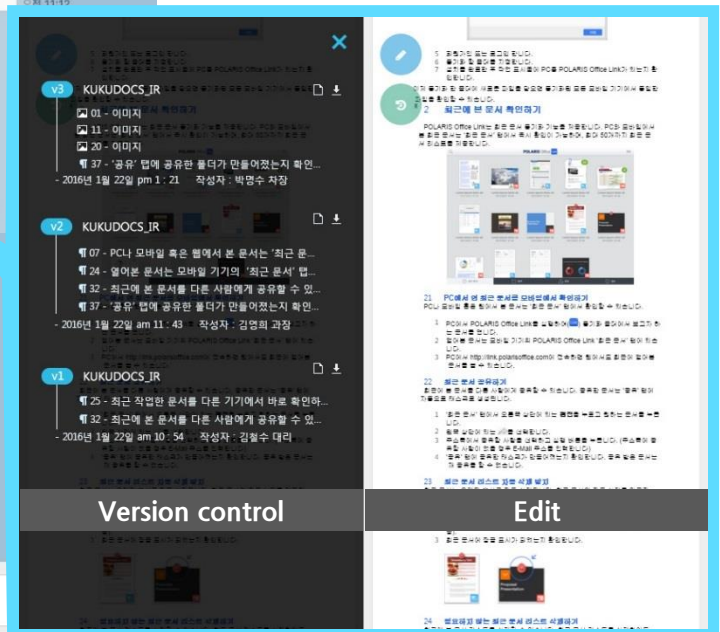
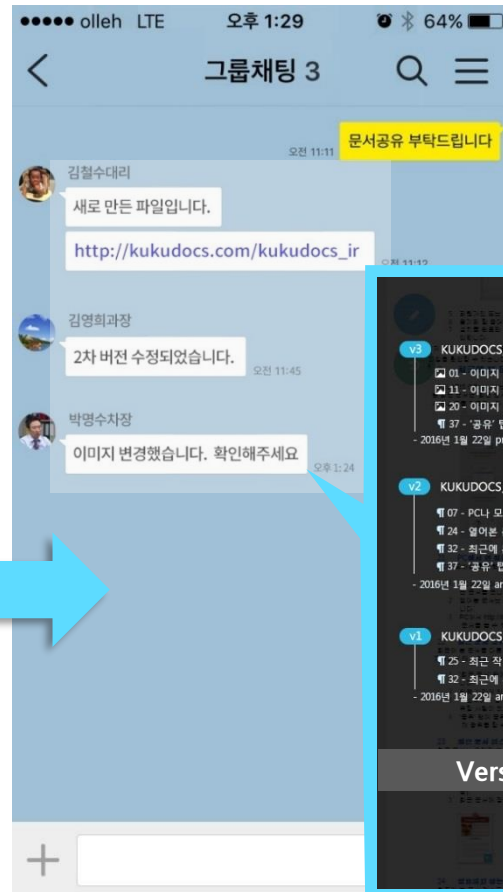
# Advantages of Viewdit

Using a messenger program for document revision and confirmation creates infinite number of files, as a cycle of downloading, modifying and uploading repeats. When using the Viewdit, however, people can make different versions of a document and still maintain one file on the server because they work on the file using the URL generated from the Viewdit. It provides indexing and search options as well. (Search module API is under development)

Document version control using existing messenger program.



Document version control using Viewdit



# Thank you!

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## Contact us

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