

# Vault for infrastructure projects and business document management: Actual Experience

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# Class summary

In this session we will focus on actual experience of infrastructure engineering companies working with Vault. The speaker will present a training strategy which was especially useful for introducing employees to Vault. He will also share experience on the best motivations for employees. The discussion will include the functionalities of Vault most useful to and appreciated by engineers, managers and the administration. The speaker will elaborate on the main advantages of Vault as seen by the employees of the company – the administration, managers, engineers, as well as IT and CAD administrators – carrying out different functions and using different software, such as the Vault Client, MS Office, AutoCAD LT, Civil 3D, Bentley Microstation. The speaker will share practical ideas on optimizing Vault through using additional programming and configuration. The discussion will also include tasks for Job servers.

# Key learning objectives

At the end of this class, you will be able to:

- Receive practical advice on facilitating transition of employees to Vault. Find out the best training strategy.
- Find out what functionalities of Vault are most appreciated by infrastructure engineers and business document managers.
- Find out the views of different users, including CAD administrators, why Vault helps manage projects more efficiently.
- Tips and tricks on Vault optimization. Developing additional subprograms, using Job servers.

# Agenda

- About JSC Kelprojektas.
- Vault implementation history.
- Facts and numbers about Autodesk Vault configuration.
- The fastest way to start working with Vault: training strategy.
- Vault functionality appreciated by engineers.
- Vault functionality appreciated by business document managers.
- How Vault assists employees to carry out their different functions more effectively.
- Expansion of Vault potential using applications.

**Why am I here?**

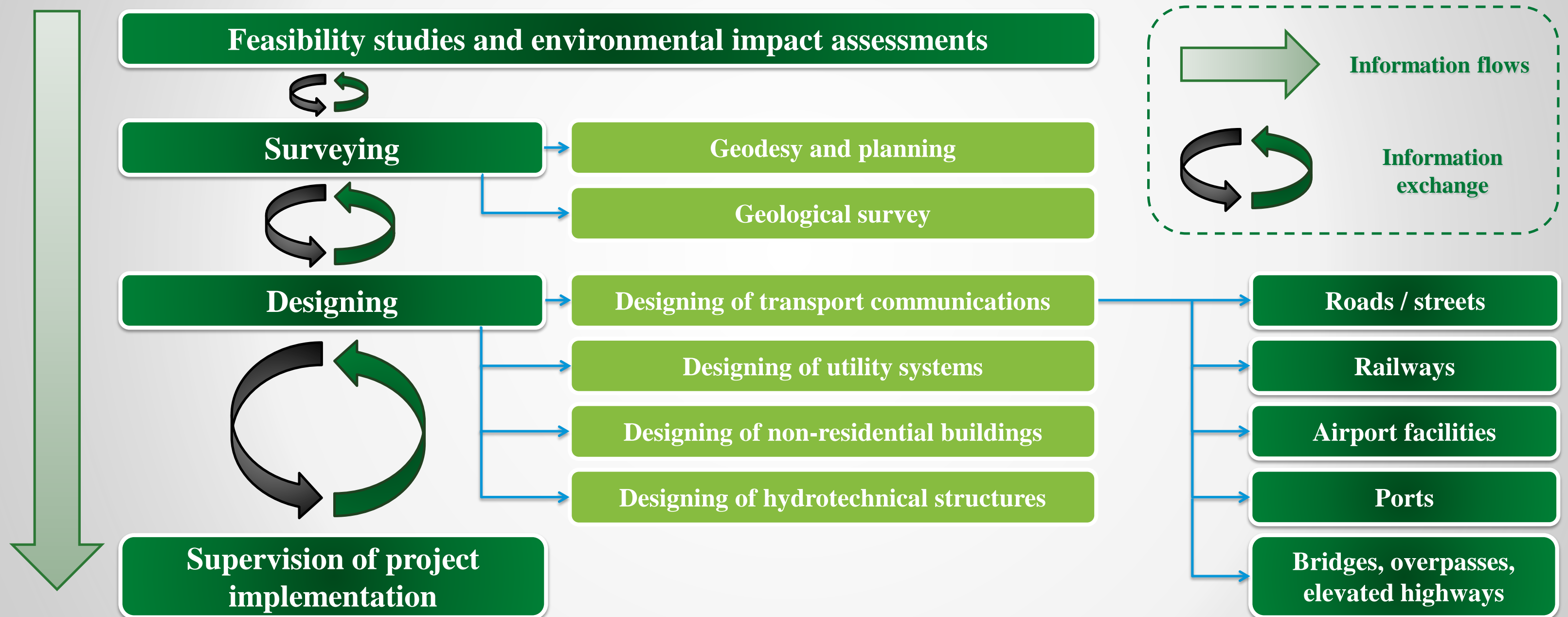
**Why JSC KelprojeKTas decided to implement Vault?**



# About JSC Kelprojektas

- Currently Kelprojektas is the biggest transport infrastructure engineering company in Lithuania.
- The company was set up in **1956**.
- Now Kelprojektas has 225 employees, 4 office's in Lithuania, 1 in Estonia.
- Specialists of Kelprojektas work with various software:
  - Autodesk - AutoCAD, AutoCAD LT, AutoCAD Electrical, AutoCAD Architecture, Robot Structural Analysis, AutoCAD Map, 3ds Max Design, AutoCAD Civil 3D.
  - Bentley – Microstation, STAAD.
  - SoFisTik, ANSYS/Structural and etc.
- Autodesk products contains about 80 % of company engineering software portfolio.
- **Main software is AutoCAD Civil 3D.**

# Services provided by JSC Kelprojektas, and information flows within the company

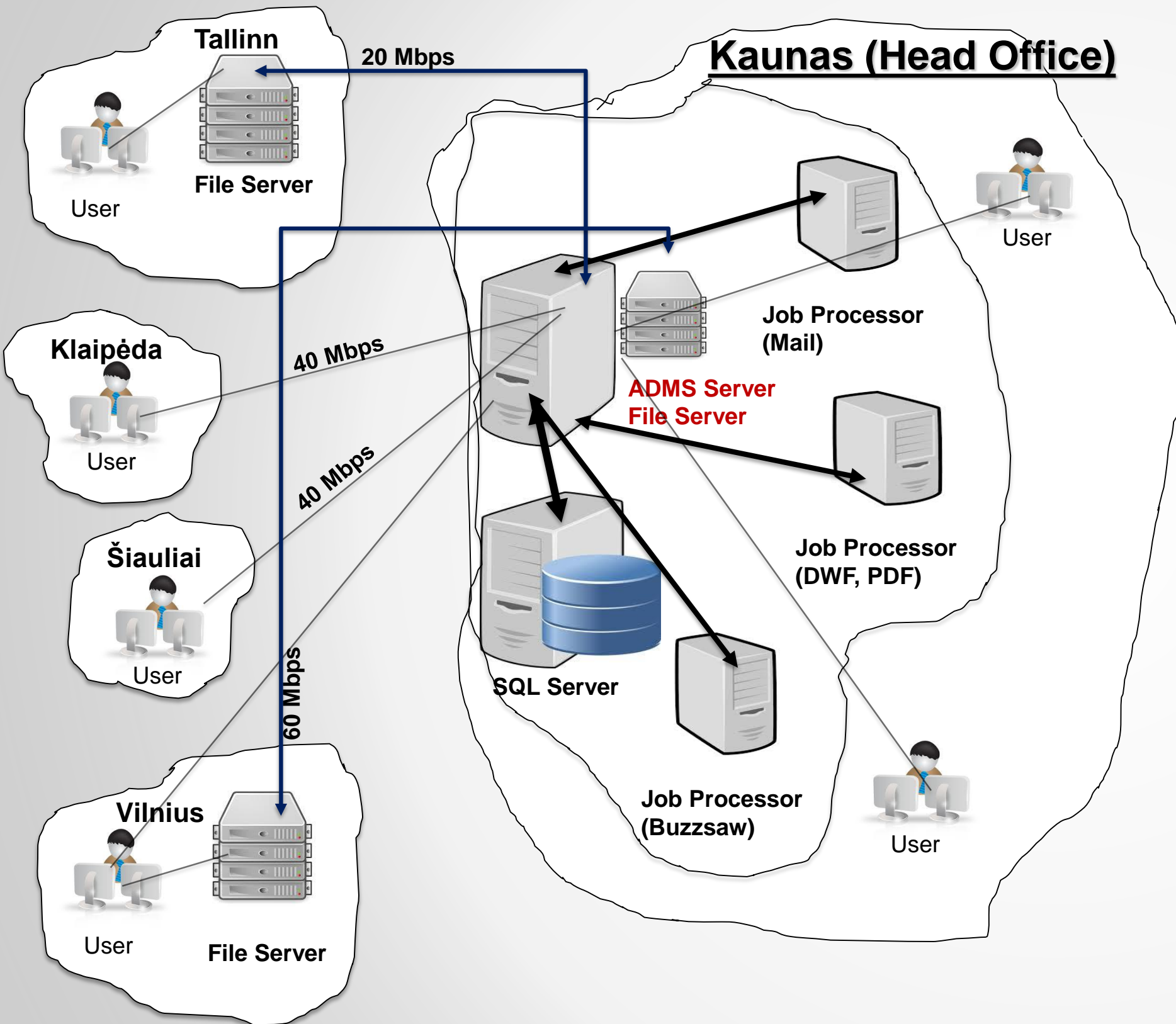


# History of Vault installation

- In 2008, the company began looking for more effective ways to manage documents.
  - ✓ The main task was management of engineering documents.
- DMS system analyses were upgraded by the end of 2010.
  - ✓ New key criterion was added – the support of Civil 3D Data shortcuts.
  - ✓ Applications were analysed.
- Additional requirement was added in 2011 – the management of business documents.
  - ✓ Pilot projects were carried out.
- The agreement was signed and Vault implementation began in Q3, 2012.
  - ✓ The system should be implemented from 1 September 2012 to 31 December 2014.
- More information: Autodesk University 2013: CI1889-R - Implementing Autodesk® Vault in an Infrastructure Engineering Company: An Actual Experience



# Diagram of the Vault system



- ADMS + File Server
- 3 Job Servers
- 4 remote offices, one of them in another country
- A total of around 200 users
- Connection speed between offices from 20 Mbps to 60 Mbps
- File Server in the biggest remote office and in the office of another country with a slower internet connection

## Job servers:

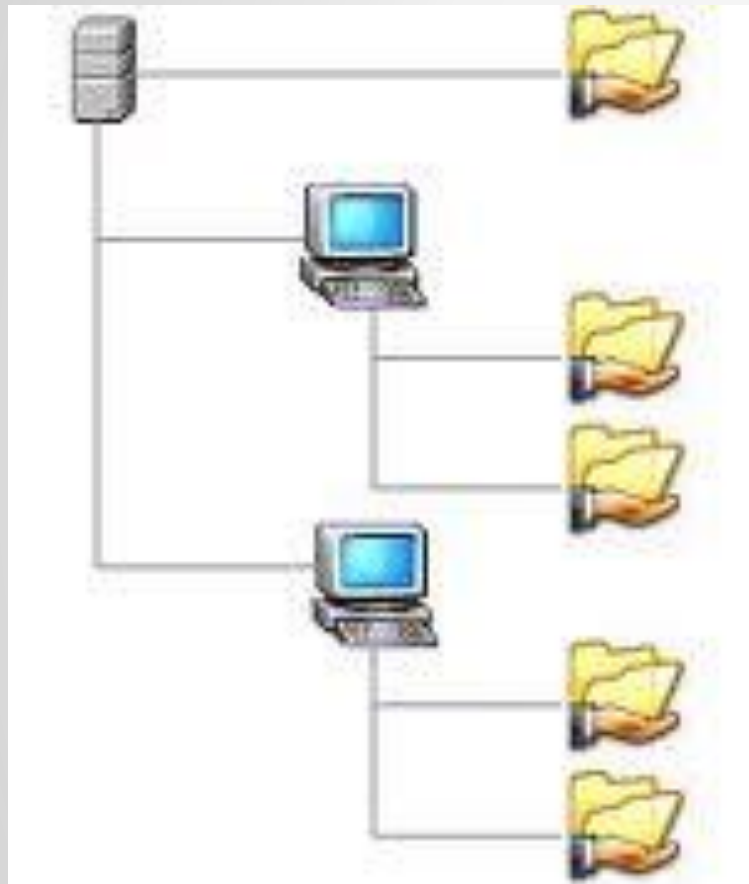
- E-mail Job Server sends e-mail messages initiated by Lifecycle or Watch Folder processes;
- Buzzsaw Job Server synchronises data Buzzsaw-Vault-Buzzsaw;
- Job Server generating DWF, PDF.

## Current situation:

- Around 35 projects in Vault;
- Around 10 operational business processes;
- Around 35,000 files, 60 GB storage;
- Around 20 life cycles for engineers and business;
- Around 40 file/catalogue categories;
- Over 150 custom attributes;
- Template for project catalogue structure;
- Training material for users;
- Additional tools for users and administrators.

# Vault has been installed and set up. What next?

- How to ensure smooth transfer to working with Vault?



- What training strategy is the best?



# Vault has been installed and set up. What next?

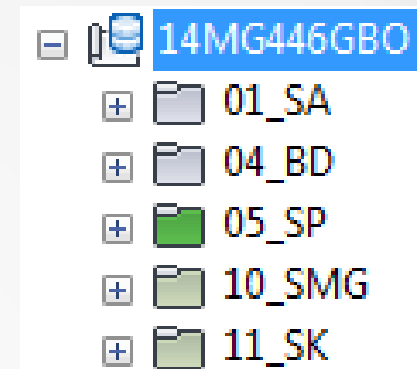
## Do your homework:

- Analyse and organise the needs of all users;
- Create the Vault environment for training;
- Create training material based on examples and situations specific to your company;
- Create videos explaining how to accomplish certain tasks;
- Create technical documentation;
- Prepare a working scenario for key positions.



# The easiest way to start working with Vault

**Create a real project with a real employee to work on it.**



**Make a short introduction on Vault (ca. 15 min) and a clear sequence of actions on how to upload and edit a file.**



**Video preview.**



**Vault training (ca. 8 hrs) with tasks.  
Optimal number of trainees: 6.**



# Important for users:

- **Once you start working with Vault there is no turning back.** Any encountered problems have to be solved in Vault;
- All the necessary and relevant information must be accessible within Vault;
- Vault is not a storage/archive of data – it is a place for real time working with and sharing information;
- If the project is carried out in Vault, no file should be sent by e-mail – only links. Everything can be found in Vault.



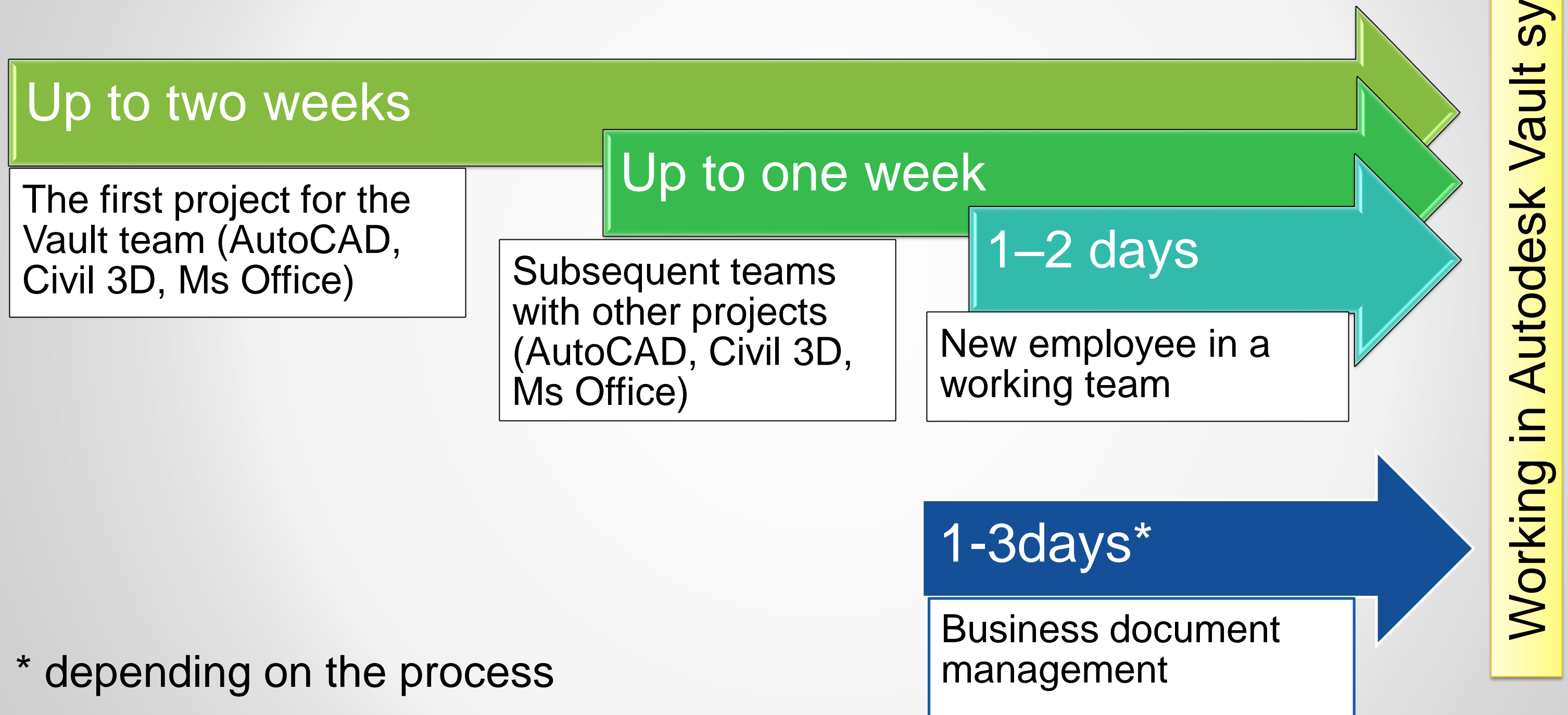
# Important for Vault installer and/or administrator:

- **Once you start working with Vault there is no turning back. Reserve enough time for user assistance;**
- Employees have to be sure that they will always receive help on any encountered problems;
- The project has to be finished on time – don't start with a problematic project with a tough deadline;
- Monitor the project and prevent the problems.  
Vault allows to foresee potential problems.



# Time required to adapt to working with Vault...

## What are the real numbers?



# What motivates employees the most?

- Transparent company policy;
- All information relevant to the project can be found in Vault, which makes the work easier and faster;
- Files not uploaded to Vault cause trouble for colleagues;
- Vault makes collaboration with employees carrying out different functions more effective.



# Features appreciated by infrastructure engineers:

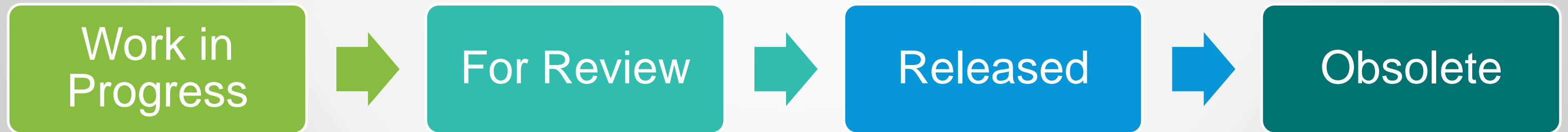
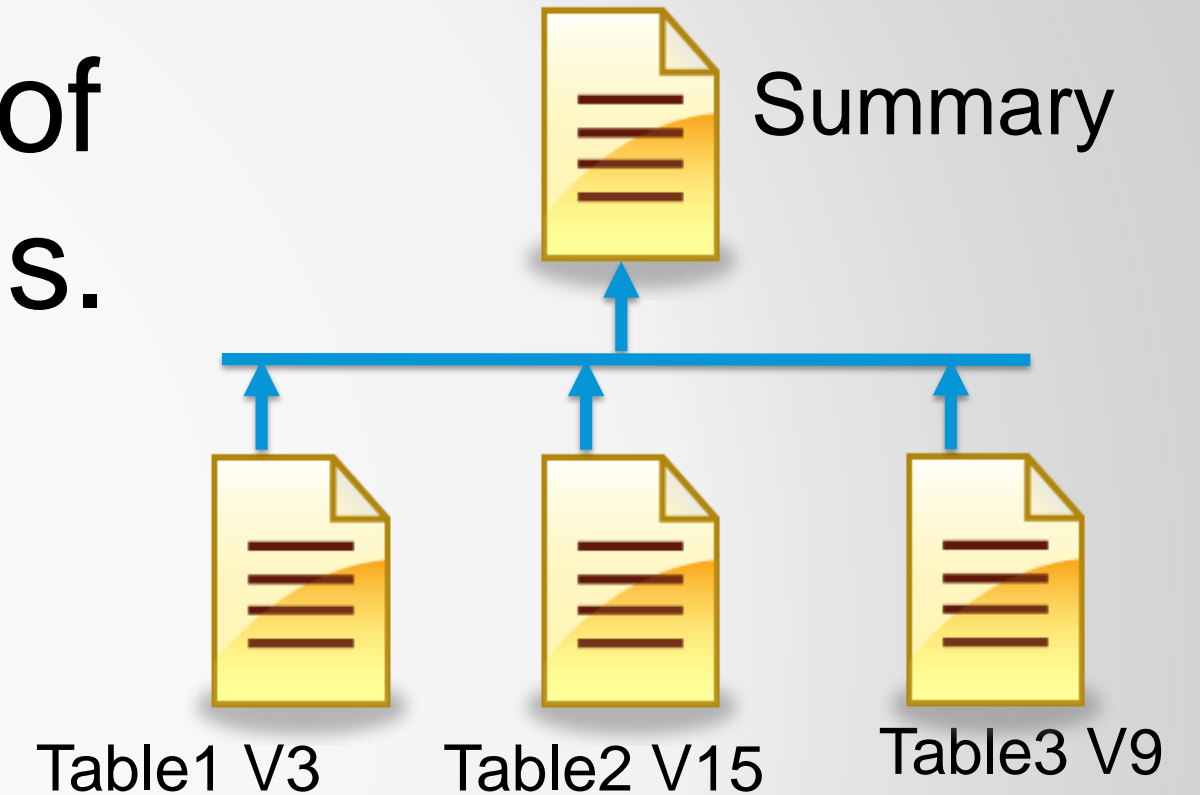
- Ability to have the entire project in a single place and work with it in an efficient way;
- File versions, revisions (comparison);
- File history (who and when uploaded the file), comments;
- Search, filters.

# Features appreciated by infrastructure engineers:

- Lifecycle allows to see the stage of the file and make proper decisions.

**Can be edited  
by all**

**Can be edited  
exclusively by  
the responsible  
employee**



# Features appreciated by infrastructure engineers:

- Ability to see where the file is used and by whom;
- Preservation of links among files;
- Integration into Civil 3D data shortcuts enables working on a single project involving remote subdivisions;
- Integration into AutoCAD;
- DWF creation in the Job Server.

# Features appreciated by business document users:

- Search, attributes;
  - ✓ Filtering documents according to attributes or Lifecycle stages;
  - ✓ Formulating tasks for self and colleagues;
- Reports;
- Lifecycle and automated processes;
  - ✓ Automated e-mails;
  - ✓ Automated task generation.

# Why work is more efficient for Civil 3D users using Vault?

- The entire project in a single place;
- Ability to work effectively in a team with remote subdivisions;
- Open files are stored on local disks making the work with files faster than on the network;
- Ability to work with files off-line.



# How Vault helps IT and CAD administrators:

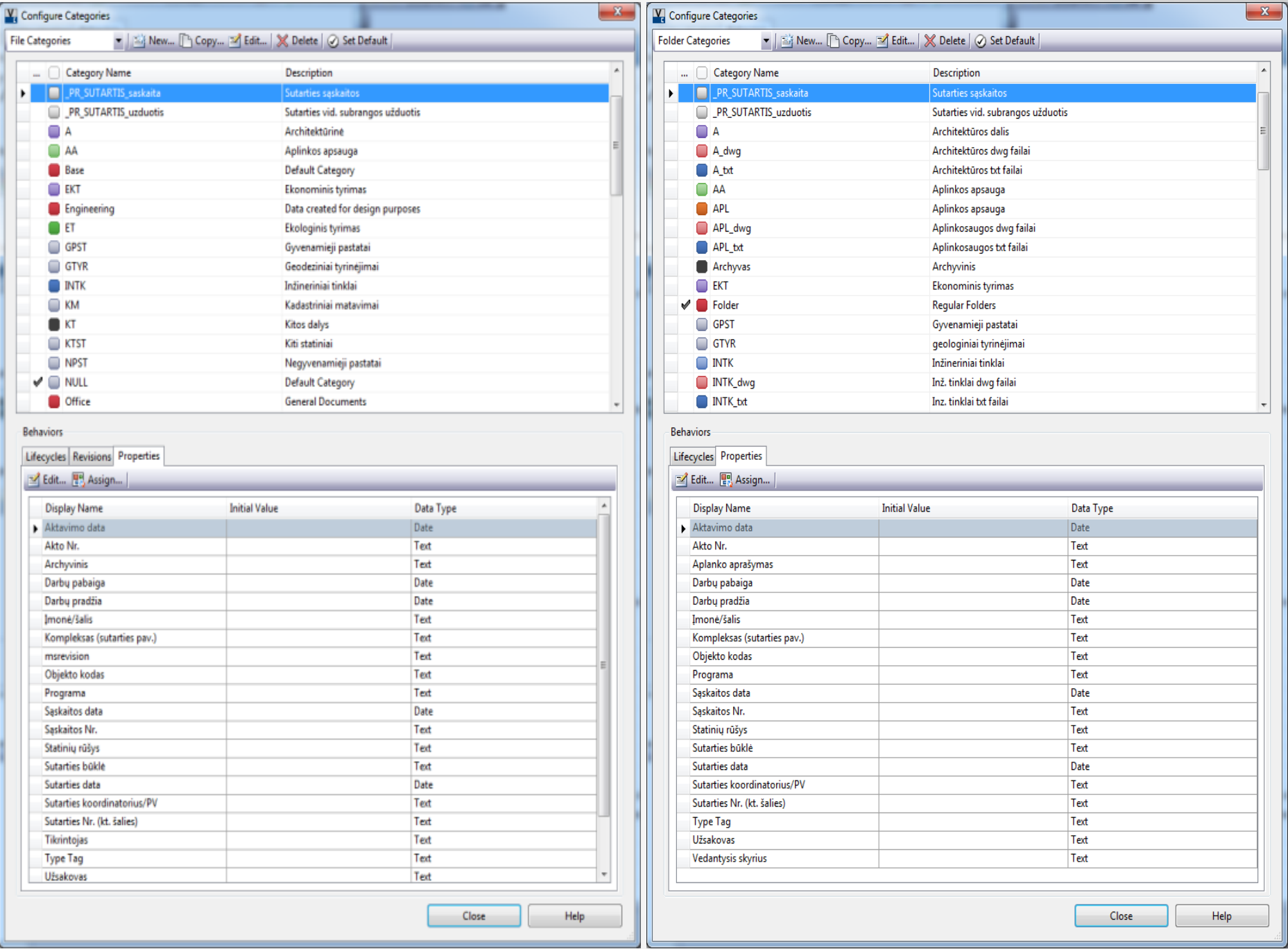
- Ability to see the big picture;
  - ✓ File history;
  - ✓ Links between files;
- Ability to go back several versions;
- Ability to recover a similar situation in a separate computer;
- Real-time monitoring of the situation;
  - ✓ Monitoring which files have not been returned to Vault on time;
  - ✓ Identification of files that don't meet the required standards.

**Developing additional applications:  
a few ideas to make the work more efficient.**

# Auto file category assign by folder category



File receives the same category as the catalogue, if the category exists on the list of categories.



# Auto file naming scheme assign by category



On File rename Auto selecting file naming scheme by category or/and file path

Greitas Failo pervardinimas

Esamas failo pavadinimas/Existing file name  
Copy of PR-14-001.docx

Naujas failo pavadinimas /New file name  
PR-14-###

.docx Reject Accept

Configure Categories

Folder Categories

Category Name	Description
A	Architektūros dalis
A_dwg	Architektūros dwg failai
A_txt	Architektūros txt failai
AA	Aplinkos apsauga
AA_dwg	Aplinkos apsauga
AA_txt	Aplinkos apsauga
APL	Aplinkos apsauga
APL_dwg	Aplinkosaugos dwg failai
APL_txt	Aplinkosaugos txt failai
Archyvas	Archyvinis
EKT	Ekonominis tyrimas

Numbering Schemes

File

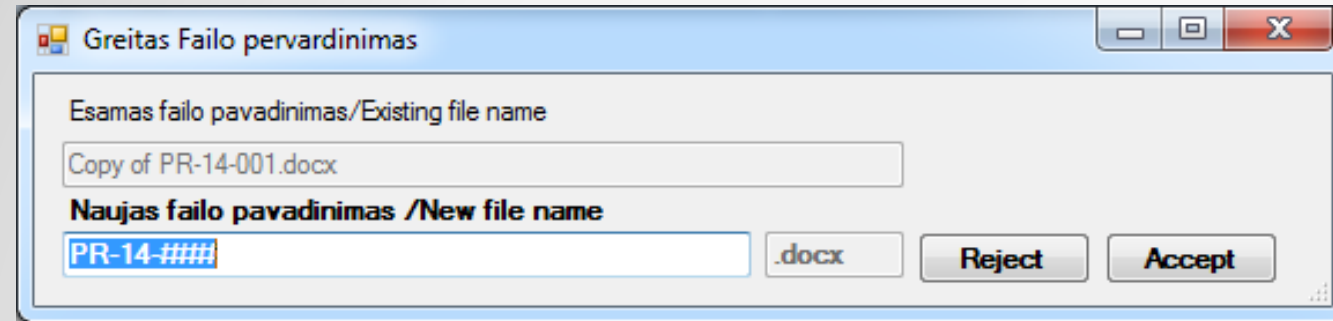
Name	Type	Active	Default	Preview
Atostogu_isak_14	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	A-14-###
FreeText	File	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	?
Gauti_rastai_14	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	GR14-#####
Gauti_rastai_14EE	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	GR14-###EE
Gauti_rastai_14KL	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	GR14-###KL
Gauti_rastai_14SA	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	GR14-###SA
Gauti_rastai_14VL	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	GR14-###VL
Komandiruociu_isak	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	K-??-??-??
P12_Potvarkis	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PTV-??-??-##
Personalo_isak	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	P-??-??-??
Potvarkis	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PTV-12-08-##
Protokolas14	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PR-14-###
R01_Sutartys	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	SU12-####?
R03_Siunciami_Rastai	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	SR12-#####
Sequential	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	#####
Technine_uzduotis	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TU-###
Uzduotis	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	U-###
Veiklos_isak	File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	V-??-??-

Edit... New... Delete

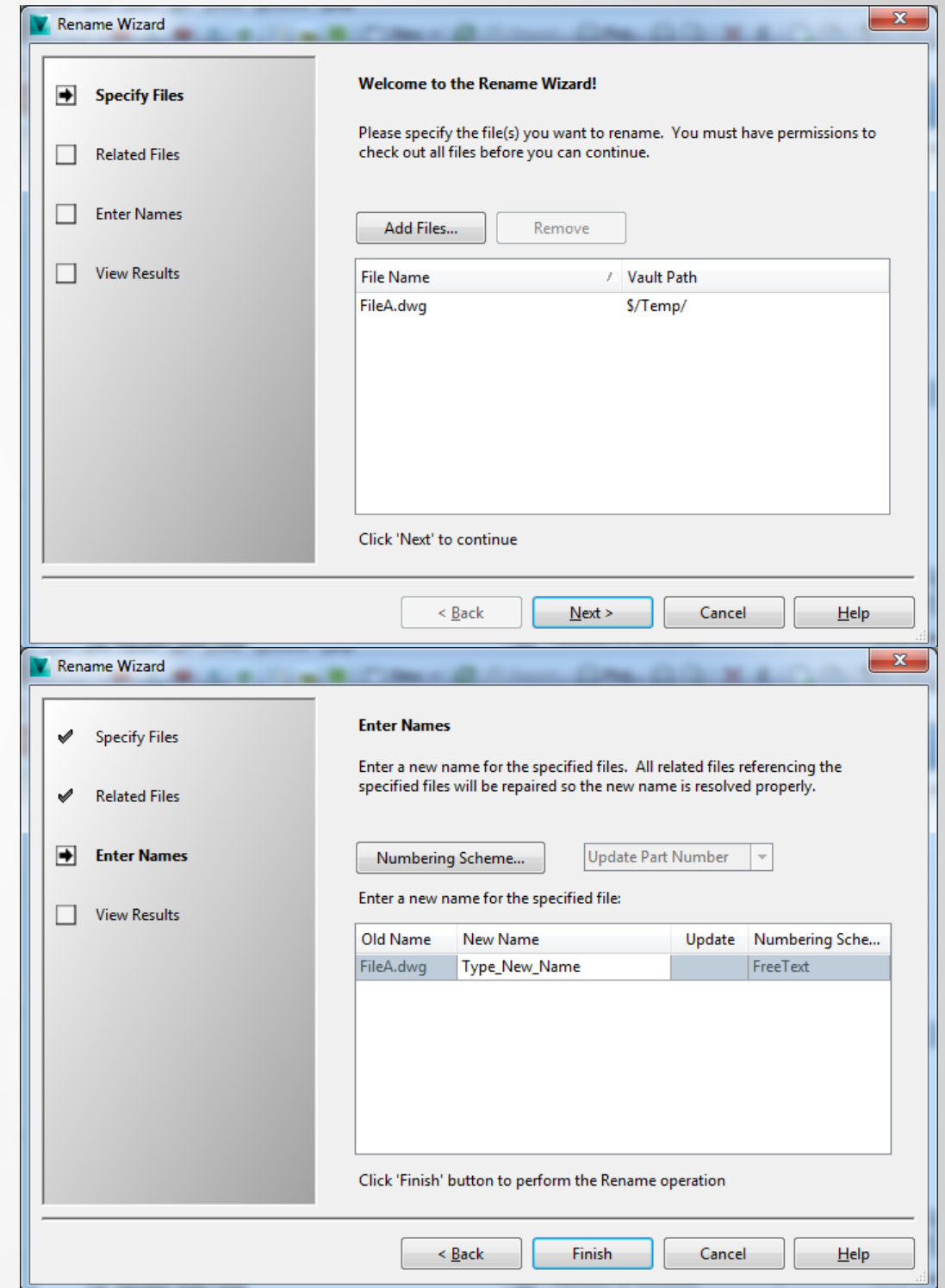
Close Help

```
if (selectedFile.Cat.CatName == "V_GAUTAS_RASTAS" && folderis.FullName.Contains("Kaunas")) { ShemeName = "Gauti_rastai_14"; SchemasPr = "GR14-#####"; }
if (selectedFile.Cat.CatName == "V_GAUTAS_RASTAS" && folderis.FullName.Contains("Klaipeda")) { ShemeName = "Gauti_rastai_14KL"; SchemasPr = "GR14-###KL"; }
if (selectedFile.Cat.CatName == "V_GAUTAS_RASTAS" && folderis.FullName.Contains("Siauliai")) { ShemeName = "Gauti_rastai_14SA"; SchemasPr = "GR14-###SA"; }
```

# Fast file renaming: all in one step



- Files are renamed in a single window and with a single mouse click.
- In order to rename the file, the user does not have to be authorised to delete it.





# Attribute filling forms; automation

- More user-friendly and automated filling of attributes.
- Integration into existing databases.
- Automated Lifecycle management.

The screenshot displays a software application window titled 'Einami\_rastai'. It features a table at the top listing files, with 'GR14-002EE.pdf' selected. Below the table is a detailed form for filling out document attributes. The form is organized into several sections: 'Gauto Reg. Nr. \*/Received Doc No \*', 'Gauta data \*/Received Date', 'Įmonė/šalis \*/Sender', 'Adresas (Pvz: I. Kanto 25, Kaunas)/Address', 'Dokumento pavadinimas \*/Document Title', 'Skyrius/padaliny/Department', 'Gavėjas(ai) \*/Receiver (s)', 'Korespondencijos būdas/Correspondence way', 'Objekto kodas/Project No', 'Pastabos/Comments', 'Atsakymas į dok. (Reg. Nr.)/Answer to Doc No', 'Sudarytojo Reg. Nr./Sender's Reg. No', 'Sudarytojo išsiuntimo data/Sender's date of sent', 'Atsakyti iki (data)/Term (date) to send reply', 'Užduoties formuluoė/Task description', and 'Užd. baigtumas\*/Task stage\*\*\*'. The form includes various input fields, dropdown menus, and checkboxes. A 'Properties' panel on the right side of the window shows a list of attributes and their values for the selected document. The bottom status bar indicates the user is logged in as 'srvvt01' and the application is running on 'KELPROJEKTAS\dariuss'.

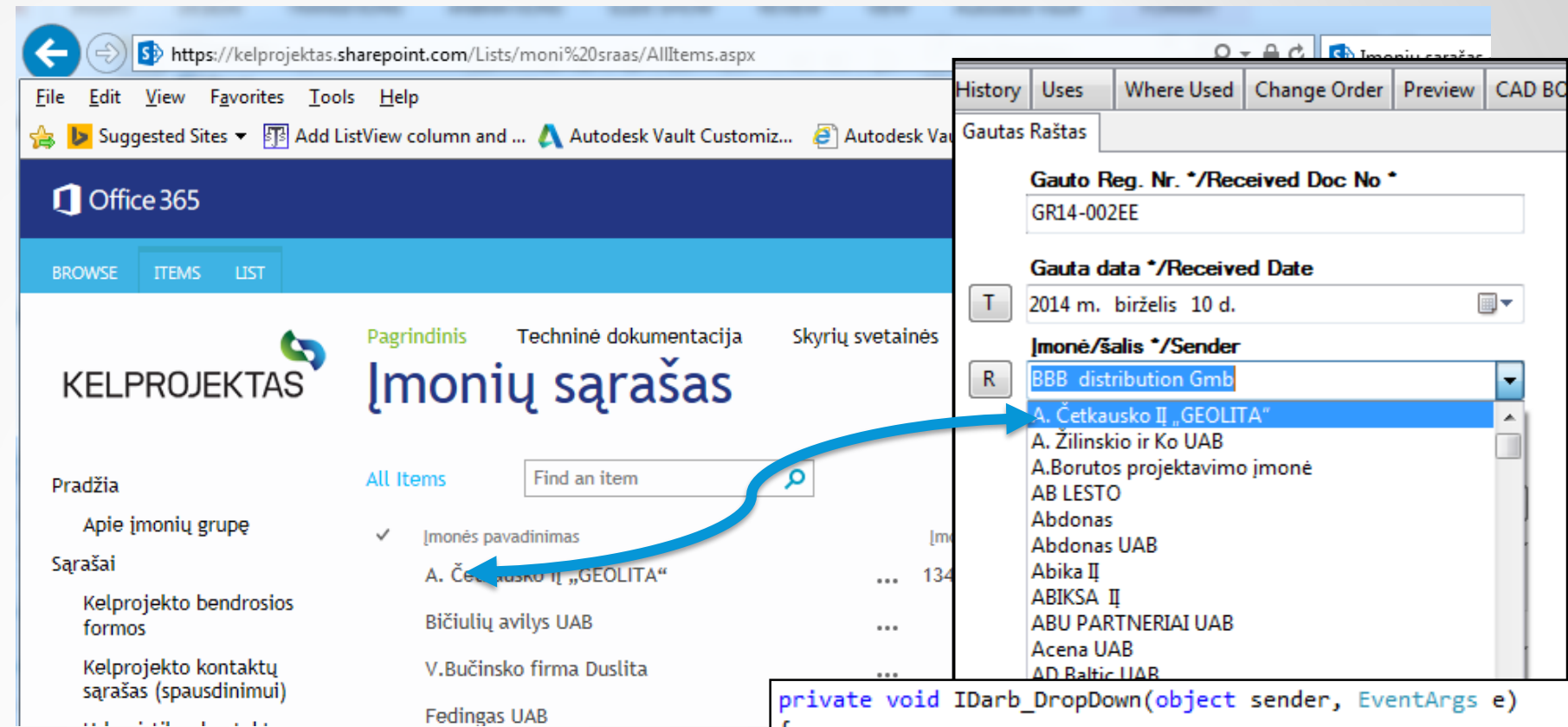
Name	Aplanko aprašymas	Description	Darbuotojas	Reg. data	State
GR14-004EE.pdf					Baigta
GR14-003EE.pdf					Baigta
GR14-002EE.pdf					Baigta

System	
Address	Gottlieb-Daimler 1,Harse...
Archyvinis	
Atsakymas į dok.	
Atsakyti iki	
Dokumento pavadin...	doc building bridge num...
Email	True
Gauta data	2014.06.10
Gauto Reg. Nr.	GR14-002EE
Gavėjas	Nino Feštšin;Laura Diliūn...
GeoRss	
Internal ID	
Įmonė/šalis	BBB distribution Gmb
Korespondencijos būd...	El. Paštu
msrevision	
Objekto kodas	
Pastabos	
Programa	
Skyrius/padaliny	Estijos padaliny
Sudarytojo išsiuntimo ...	
Sudarytojo Reg. Nr.	
Type Tag	
Užd. baigtumas	100
Užd. formuluoė	

\* - Privaloma užpildyti registruojant/Required on registration  
 \*\* - Privaloma užpildyti perstumiant į stadiją VYKDOMOS UŽDUOTYS  
 \*\*\* - Užd. baigtumas turi būti 100, perstumiant į stadiją BAIGTA  
 \*\*\* - Value must be 100, on moving to stage Baigta (Finish)

# Attribute filling forms; automation

- Reading of data from existing databases and Sharepoint lists.
- User list from Active directory.
- Filling of file attributes and moving of files to another Lifecycle stage with a single mouse click.

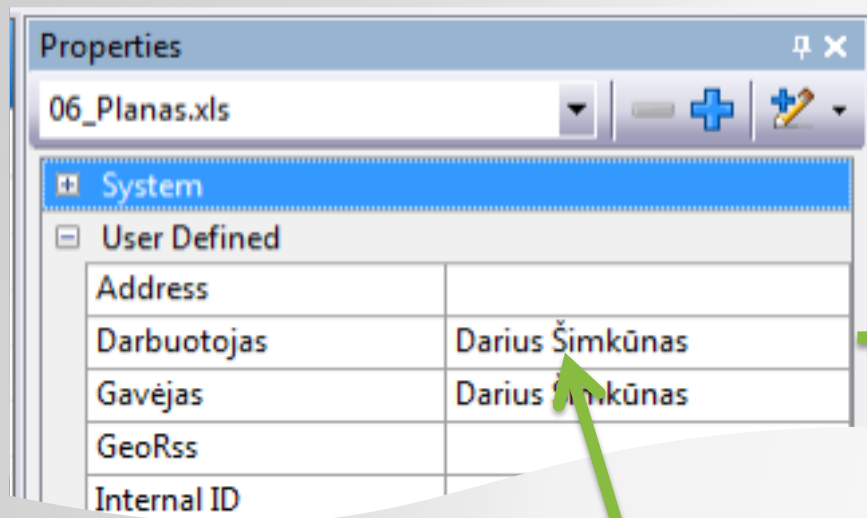


```
var context = new SP.ClientContext("https://kelprojektas.sharepoint.com/Lists/moni%20sraas/AllItems.aspx");
context.Credentials = new SP.SharePointOnlineCredentials("username", "password");
string listName = "moni sraas";
SP.Web web = context.Web;
IEnumerable<SP.List> existingLists = context.LoadQuery(web.Lists.Where(l => l.RootFolder.Name == listName));
context.ExecuteQuery();
SP.List list = existingLists.First();
var query = new SP.CamlQuery();
SP.ListItemCollection items = list.GetItems(query);
context.Load(items);
```

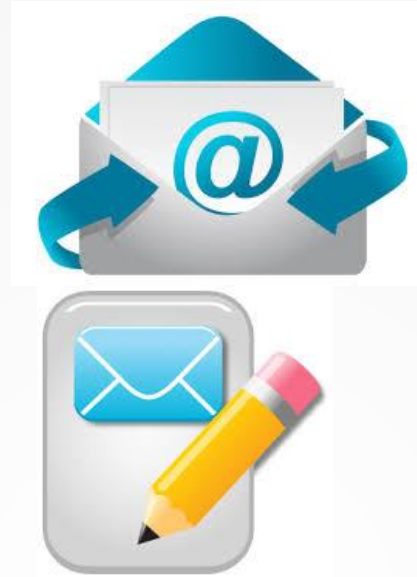
```
private void IDarb_DropDown(object sender, EventArgs e)
{
    User[] users = mAdmin_serviceManager.AdminService.GetAllUsers();

    IDarb.Items.Clear();
    foreach (User user in users)
    {
        string vardpav = user.FirstName + " " + user.LastName;
        if (vardpav.Length > 10 && user.IsActive == true)
        {
            IDarb.Items.Add(vardpav);
        }
    }
    IDarb.Sorted = true;
}
```

# E-mailing system



System	
User Defined	
Address	
Darbuotojas	Darius Šimkūnas
Gavėjas	Darius Šimkūnas
GeoRss	
Internal ID	



```
MailMessage mail = new MailMessage();
SmtpClient SmtpServer = new SmtpClient();
SmtpServer.Port = 25;
SmtpServer.Host = "192.168.20.186";
mail.From = new MailAddress(Fpastas(TTYRSiuntejas));
if (TTYRGavejas.Length > 5) { mail.To.Add(Fpastas(TTYR

mail.Bcc.Add(Fpastas(TTYRSiuntejas));

mail.Subject = subjectTTYR;
mail.Body = bodyTTYR.ToString();
meilas = mail.To.ToString();
SmtpServer.Send(mail);
```

Work in  
Progress

For Review

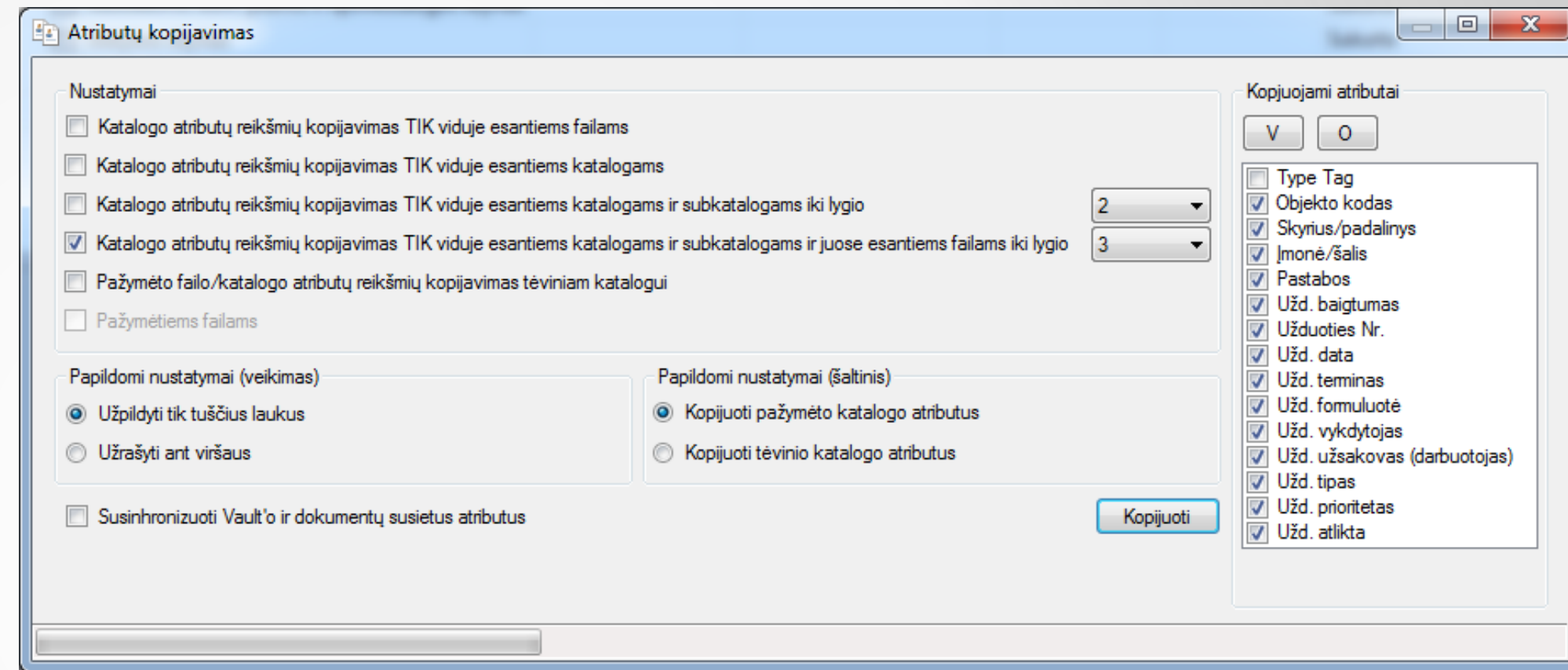
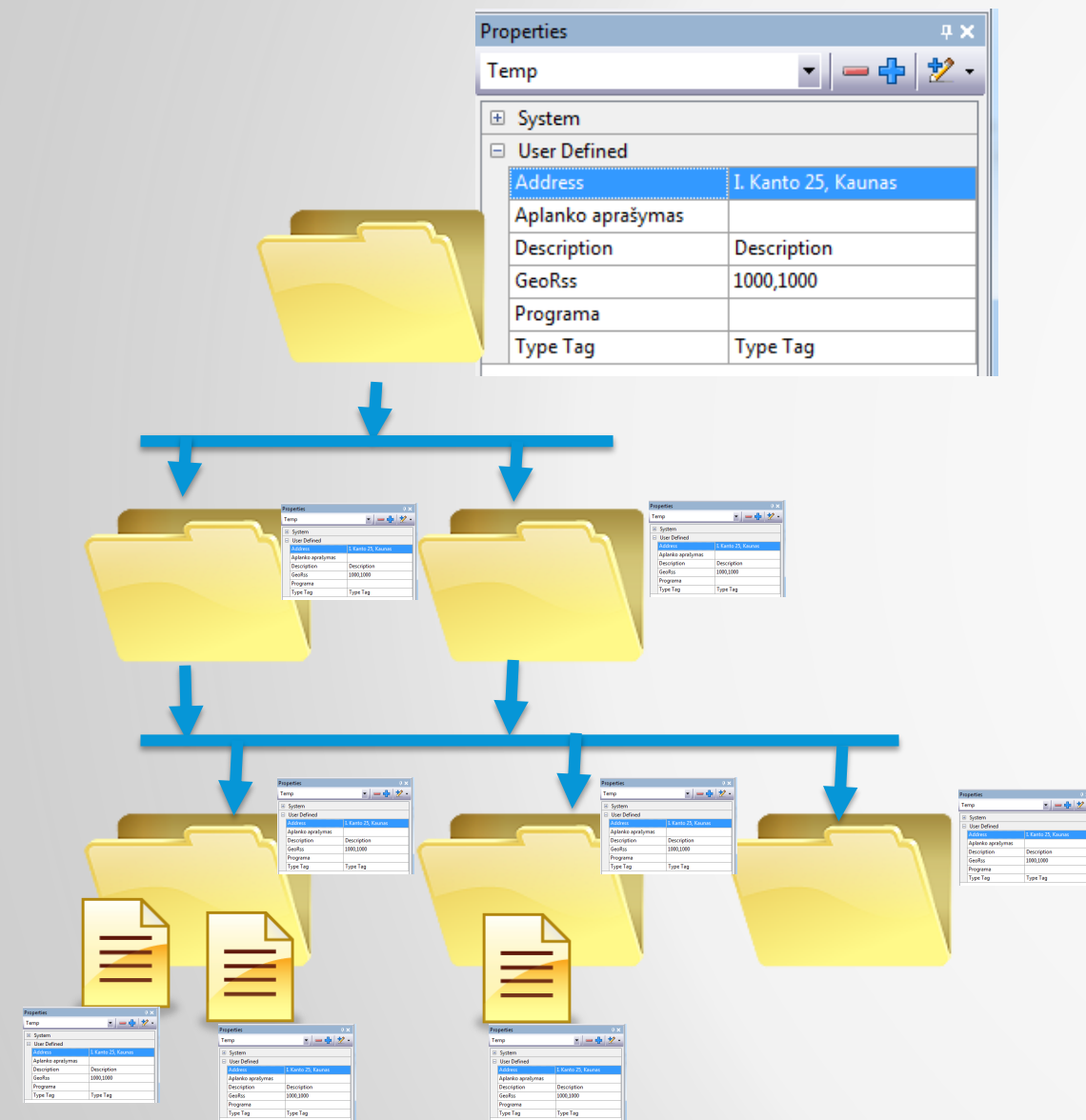
Released

Obsolete

- When the file is moved from one stage to another, all the relevant information can be read:
  - Categories;
  - Attribute values;
  - Information on previous file versions.
- Necessary actions can be carried out concerning the obtained information.



# File, folder attribute copy

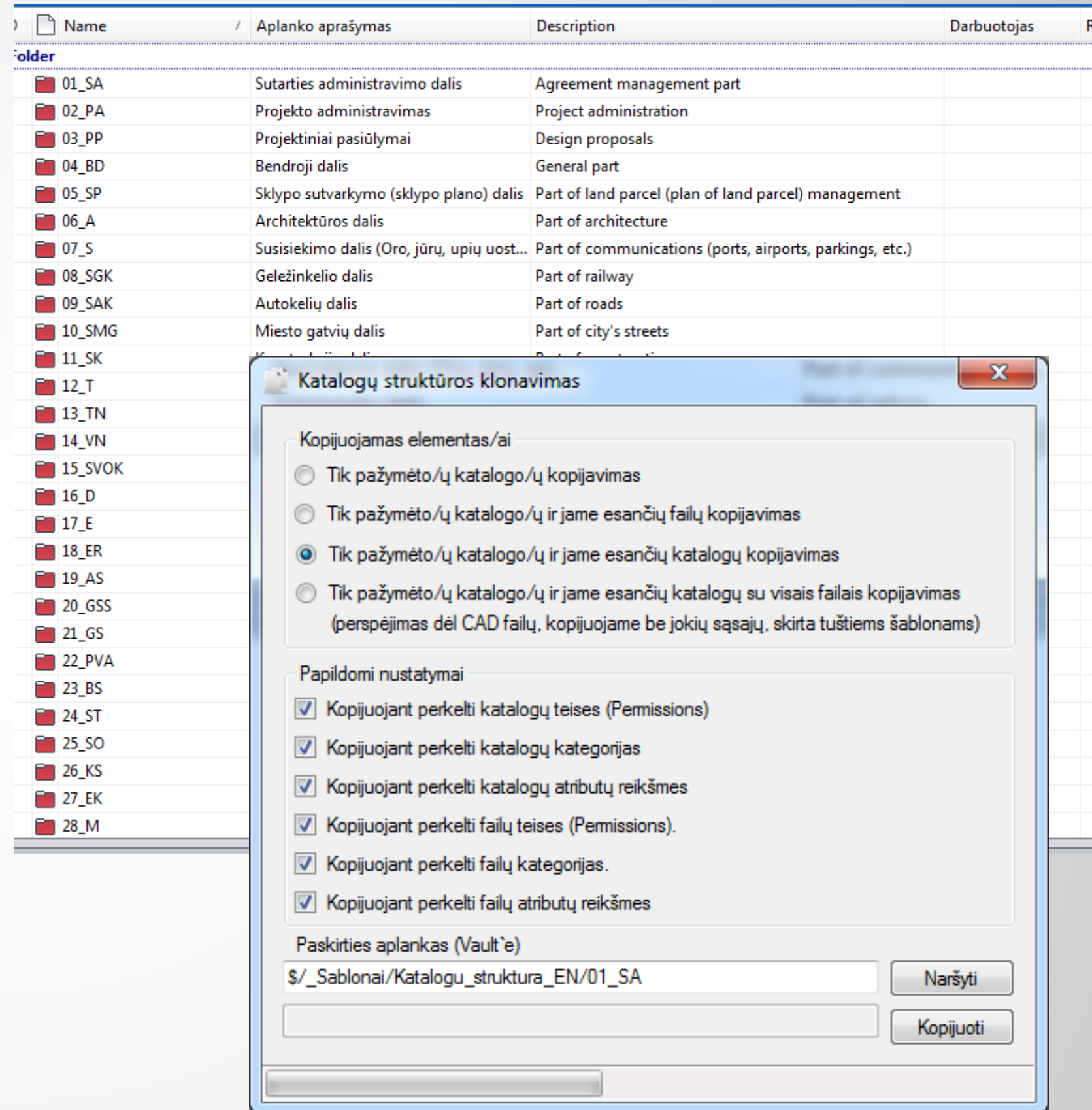


- Copies selected catalogue attribute values to catalogues and files;
- Copies values of selected file attributes to the catalogue that contains the file.

# Clone Folder structure

Copies:

- Catalogue structure;
- Catalogue categories;
- Attribute values;
- Access rights (permissions);
- Template files.





# Google Map info

Addresses or coordinates can be specified for given files or catalogues.

Doug Redmond

<http://justonesandzero.typepad.com/blog/2011/03/google-map-extension.html>


Temp

Search Temp

	Name	Aplanko aprašymas	Darbuotojas	Description	Reg. data	State	...	...	...
File	FileC.dgn						...	...	...
	FileB.dgn						...	...	...
	FileA.dwg					Rengiama	1	...	...

HistoryUsesWhere UsedChange OrderPreviewCAD BOMDatasheetGoogle Map InfoSelection InfoLifecycle Status

Update Map Information



Properties

FileA.dwg

System

User Defined

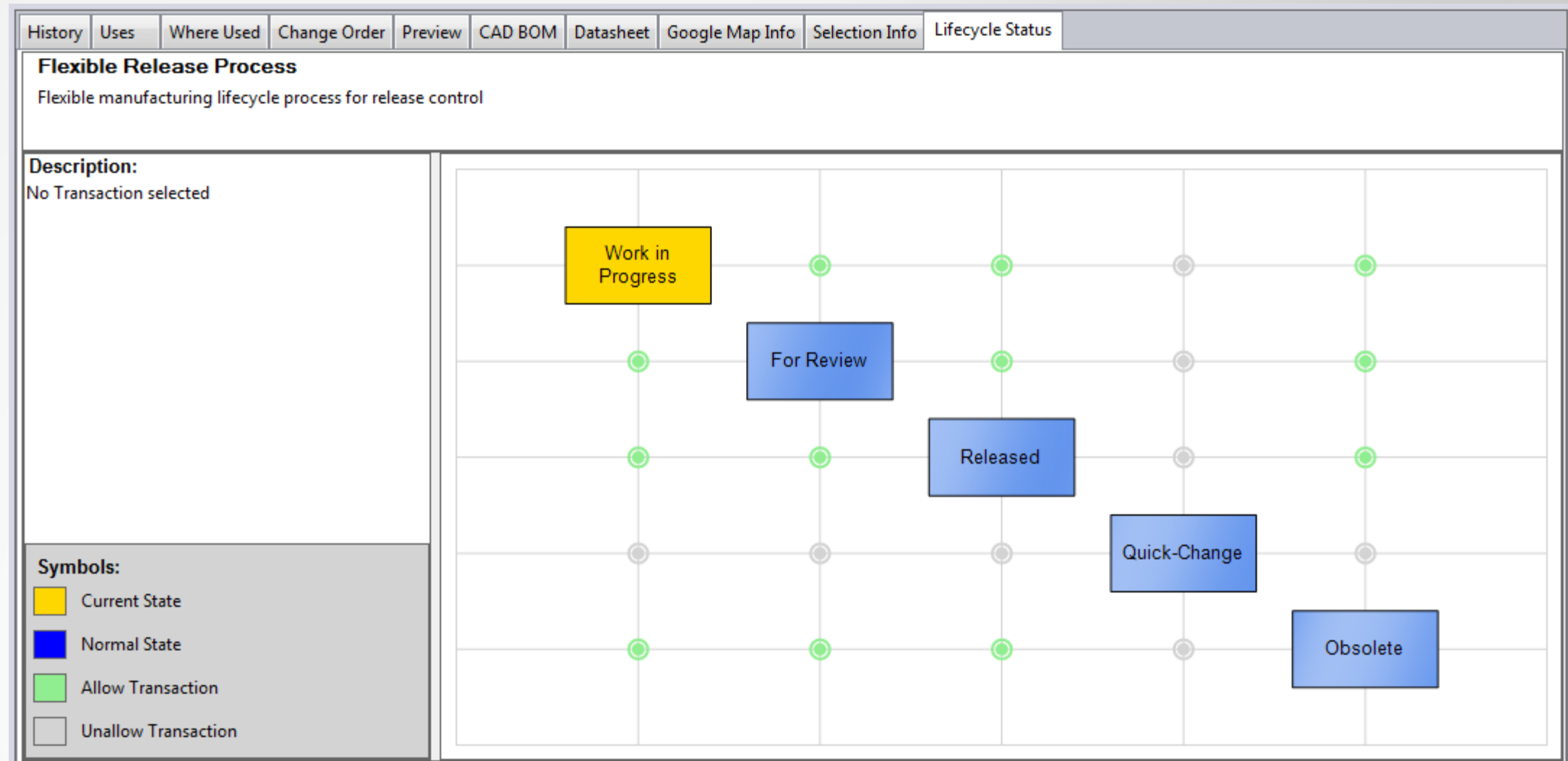
Address	I. kanto 25 Kaunas
Dalies pavadinimas	
Darbu dalis	
Darbu pabaiga	
Darbu pradžia	
Gatvė	
GeoRss	
Gyvenvietė	
Internal ID	
Kelio Nr.	
km pabaigos	
km pradžios	
Komplekso žymuo	
Miestas/Rajonas	
msrevision	
Objekto kodas	
PDV/Grupės vad.(dirba)	
PDV/Grupės vad.(pasir...	
Pogr_GTYR_TTYR	
Programa	
Projekto stadija	
Rengėjas (dirba)	
Rengėjas (pasirašo)	
Skyriaus/padalinio vad...	
Skyrius/padaliny	
Statinio/darbo pavadi...	
Statinio/darbo vadova...	
Statinių rūšys	
Sutarties būklė	
Sutarties koordinatori...	
Tikrintojas	
Type Tag	
Užsakovas	
Vykdymas iki	
Vykdymas nuo	

# Lifecycle status

```
}
if (m_selectFile.Cat.CatName == "V_POTVARKIS"
    && availToState.StateName == "Archyvinis"
    && LCState.CURRENTSTATE.StateName == "Baigta")
{
    PropDef[] fileProps = null;
    fileProps = m_serviceManager.PropertyService.GetProper
    // use LINQ to query the array
    IEnumerable<PropDef> selection =
        from propDef in fileProps
        where propDef.DispName == "Archyvinis"
        select propDef;
    if (selection.Count() == 0)
        throw new Exception("Nerastas propertis");
    PropDef fileNamePropDef = selection.First();
    long prop_id = -1;
    prop_id = fileNamePropDef.Id;
    List<long> prop_ids = new List<long>();
    prop_ids.Add(prop_id);
    List<long> ent_ids = new List<long>();
    ent_ids.Add(m_selectFile.Id);
}
```

## Doug Redmond

<http://justonesandzeros.typepad.com/blog/2011/03/visual-lifecycle-status.html>

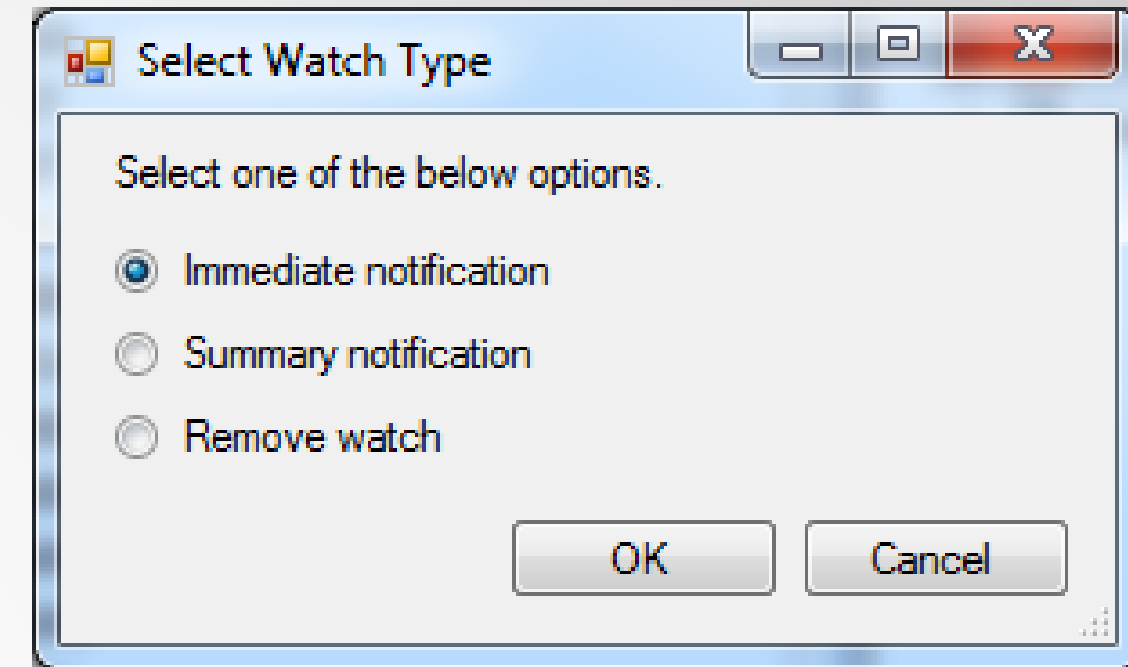


## Additional functionality:

- Writing comments when moving from one stage to another;
- Messages on how and what attributes have to be filled out when moving from a certain stage to another certain stage;
- Listing stages in a specific order in the Description field.

# Watch folder

Ability to receive messages on file changes in selected catalogues.



## Doug Redmond

<http://justonesandzeros.typepad.com/blog/2012/05/q-tools-and-watch-folder-2013.html>

**From:** Vault@kelprojektas.lt [mailto:Vault@kelprojektas.lt]  
**Sent:** Tuesday, September 30, 2014 9:44 AM  
**To:** Darius Šimkūnas  
**Subject:** Failai pridėti/atnaujinti Vault

**Nauji failai buvo įkelti arba atnaujinti (checked-in) Jūsų Vault watch kataloguose.**

[DiegimoPlanas.mpp](#)

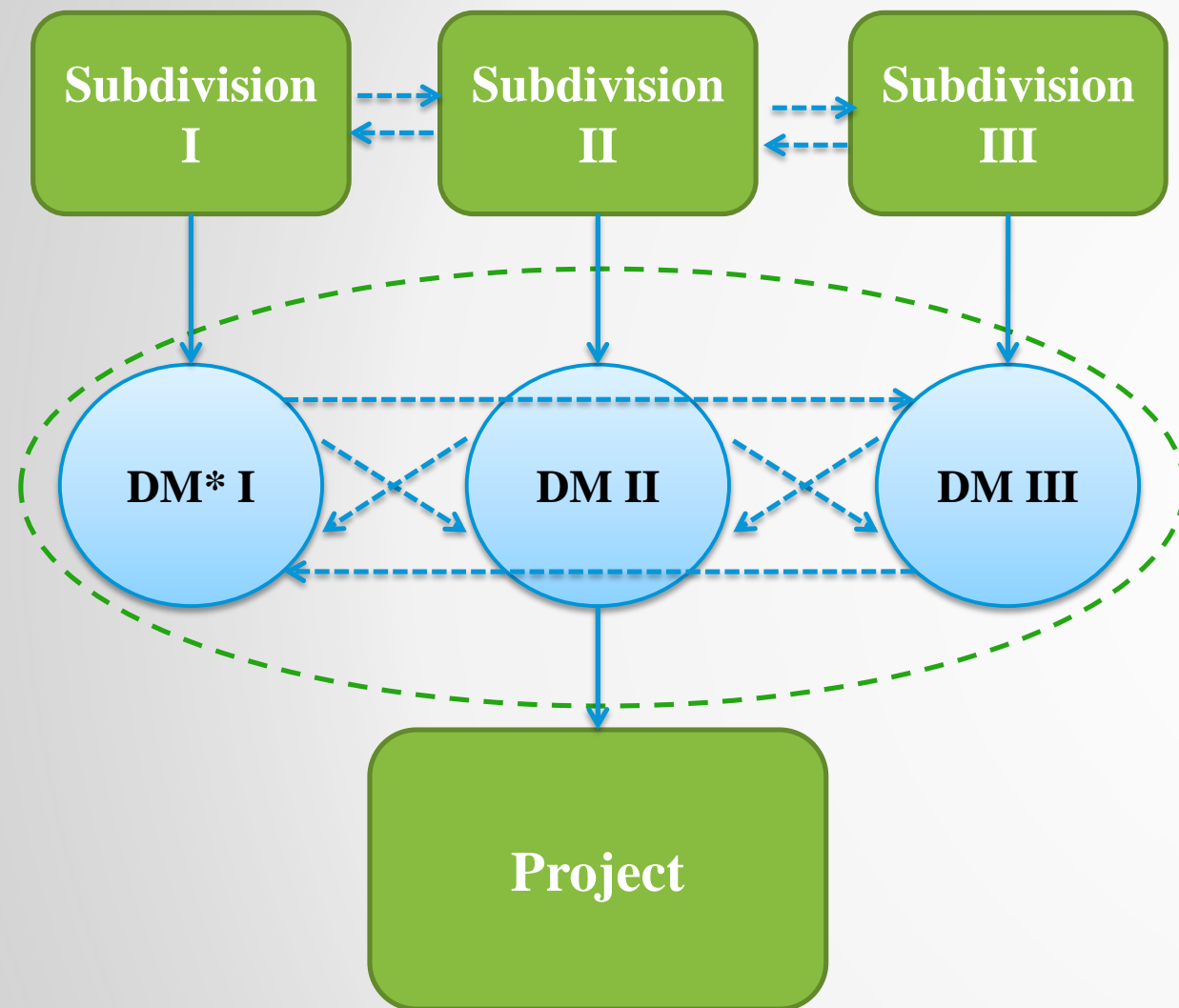
*\$/\_Vault Diegimas/Diegimo\_Grafikas/DiegimoPlanas.mpp*

*Checked in by: KELPROJEKTAS\dariuss*

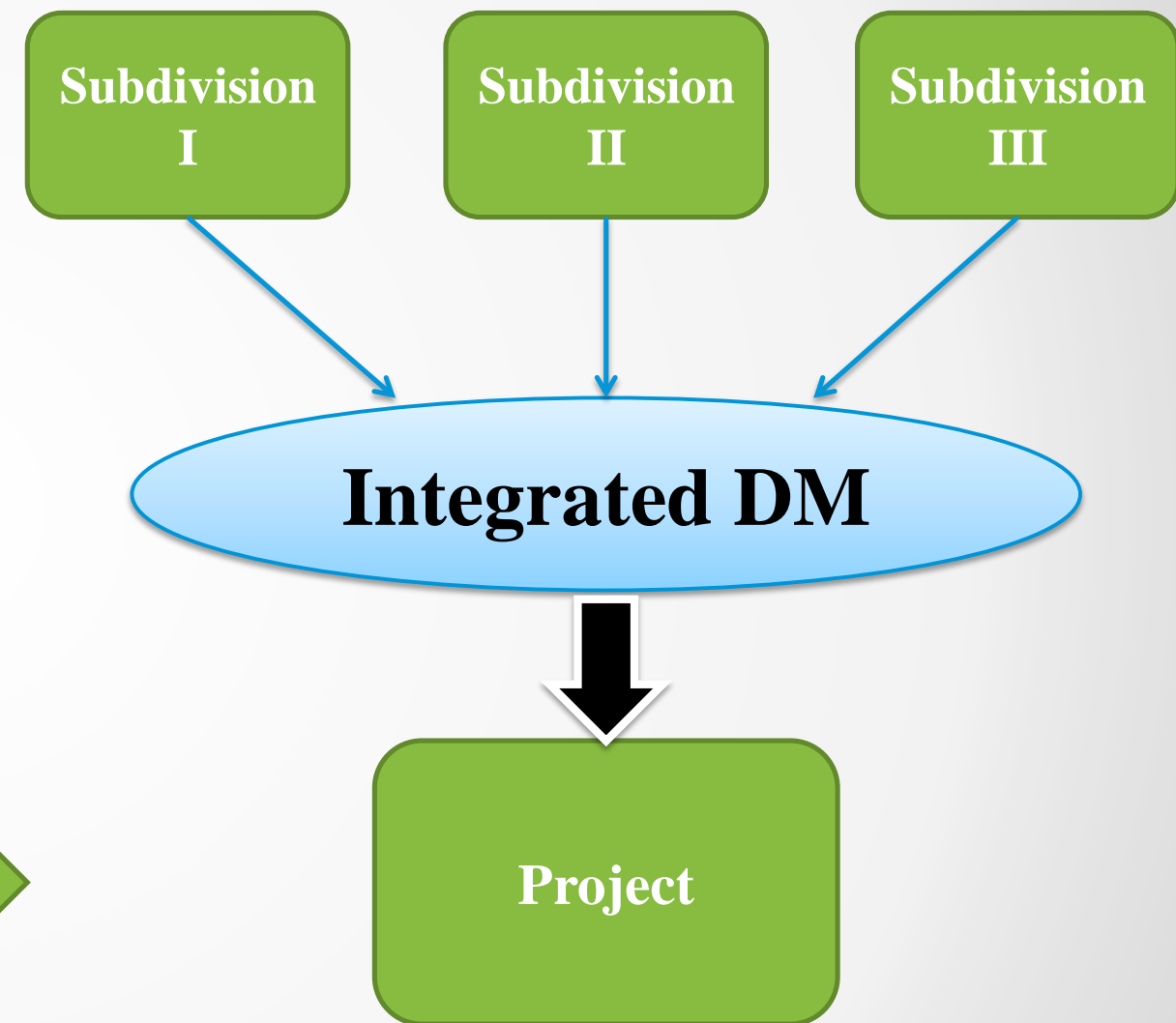
*Check in time: 2014-09-30 09:43:06*

# Conclusions

# JSC Kelprojektas digital project scheme before and after the implementation of Vault



a. Situation before Vault



b. Present situation

\*DM – digita model



# Questions?

