


## MS Power Automate: The Power to Wreak Havoc

- Warning: The following expresses only my personal opinions
- Please respect the confidentiality of this information

A close-up portrait of a woman's face, partially obscured by a digital wireframe overlay. The overlay consists of a grid of lines, with some sections highlighted in blue and red. The background is a soft, out-of-focus purple and pink.

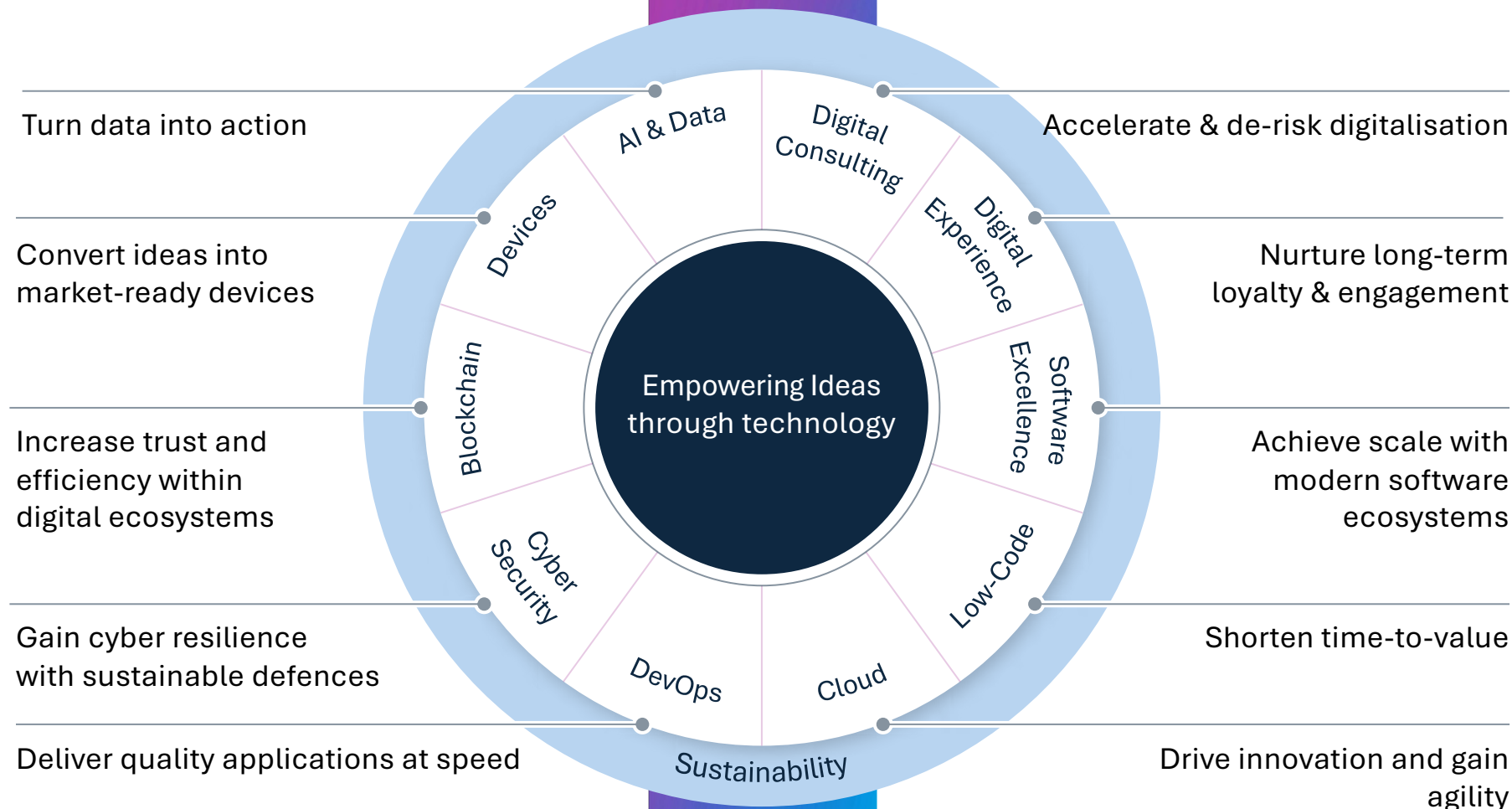
We help rewire  
organisations for the  
future...

Embedding technology at their  
core, so they can run smarter  
today and embrace tomorrow.

**zühlke**  
empowering ideas

# Zühlke Expertise

We close the gaps between strategic ambition, tech implementation, and operational excellence.





# Today and tomorrow – Zühlke has the right resources for your needs



1,700 specialists  
> 400 DACH region/1,700 worldwide



Varied profiles  
> 20 different profiles (BA, PO, software engineer, etc.)



Support across time zones  
International sites



Same culture and quality  
We have a shared mindset at all our locations

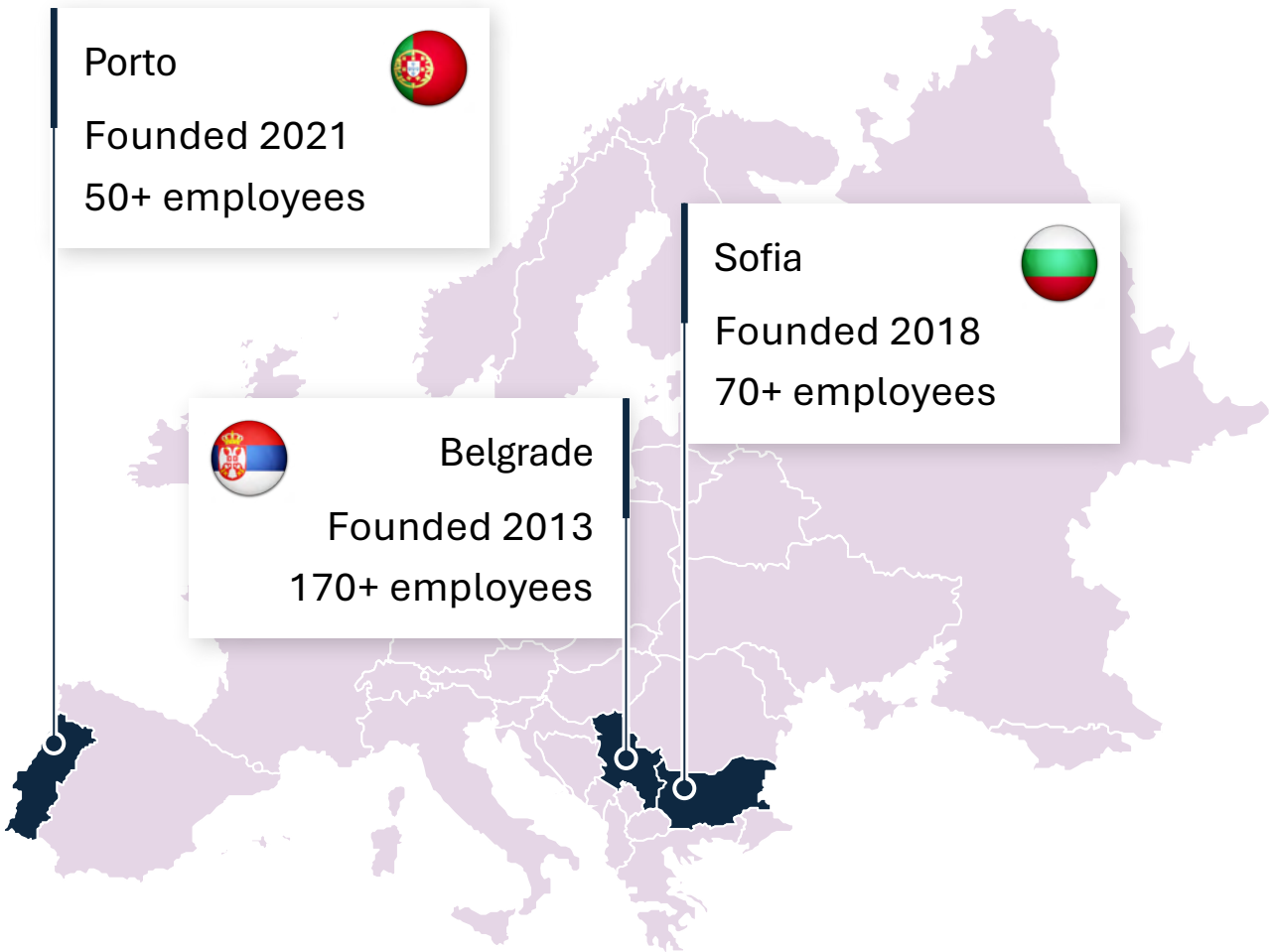
With our global distribution, we can support our customers at an international level – across time zones

We have a large pool of specialists at our disposal thanks to our varied locations. However, the quality and culture remain the same!





***1,700 specialists***




# Zühlke Global Delivery Centres (GDC) in Europe



Empowering customers through GDC







More than 400 realised projects with the support of our Global Delivery Centres for clients from a wide range of industries









Software Engineering

Data

Cloud

Devices

Mobile

Project Management

Engagement Management

# About me



- At Zühlke since 2003
- Various roles:
  - \* Software Engineer
  - \* Architect
  - \* Consultant
  - \* Application Support
  - \* DevOps Engineer
- Currently working in DevOps and AI (also known as LLMOps)
- Known for subjugating even the most obtuse software tools
- Involved in BCS OOPS and OT Conference (now SPA) since 1987
- Chair of BCS SPA for a few years now
- Occasional blogger
- Reasonably competent tenor
- Love science & technology, especially aviation and space flight
- Very family oriented
- Appreciated the value of personal networking from early on

# Agenda

The worst software  
development  
ecosystem  
imaginable?

**01**

The project and reasons to choose Power Automate

**02**

What is Power Automate (demo)

**03**

Development Environment

**04**

Some gotchas





# The Project

And why Power Automate was  
selected for its implementation



# Global Library of Sales and Delivery Assets

Electronic document library accessible to all in Zühlke

- Reusable assets
- Attributable
- Searchable
- Relevant



Clear traceability

- Ownership
- Audit trail
- Version history



Secure

- Data protection
- Publishing workflow with approvals
- Controlled access by external partners



Test Asset Library - Document

zuhlke.sharepoint.com/sites/TestA...

SharePoint Search this library

## Test Asset Library

Public group ☆ Not following

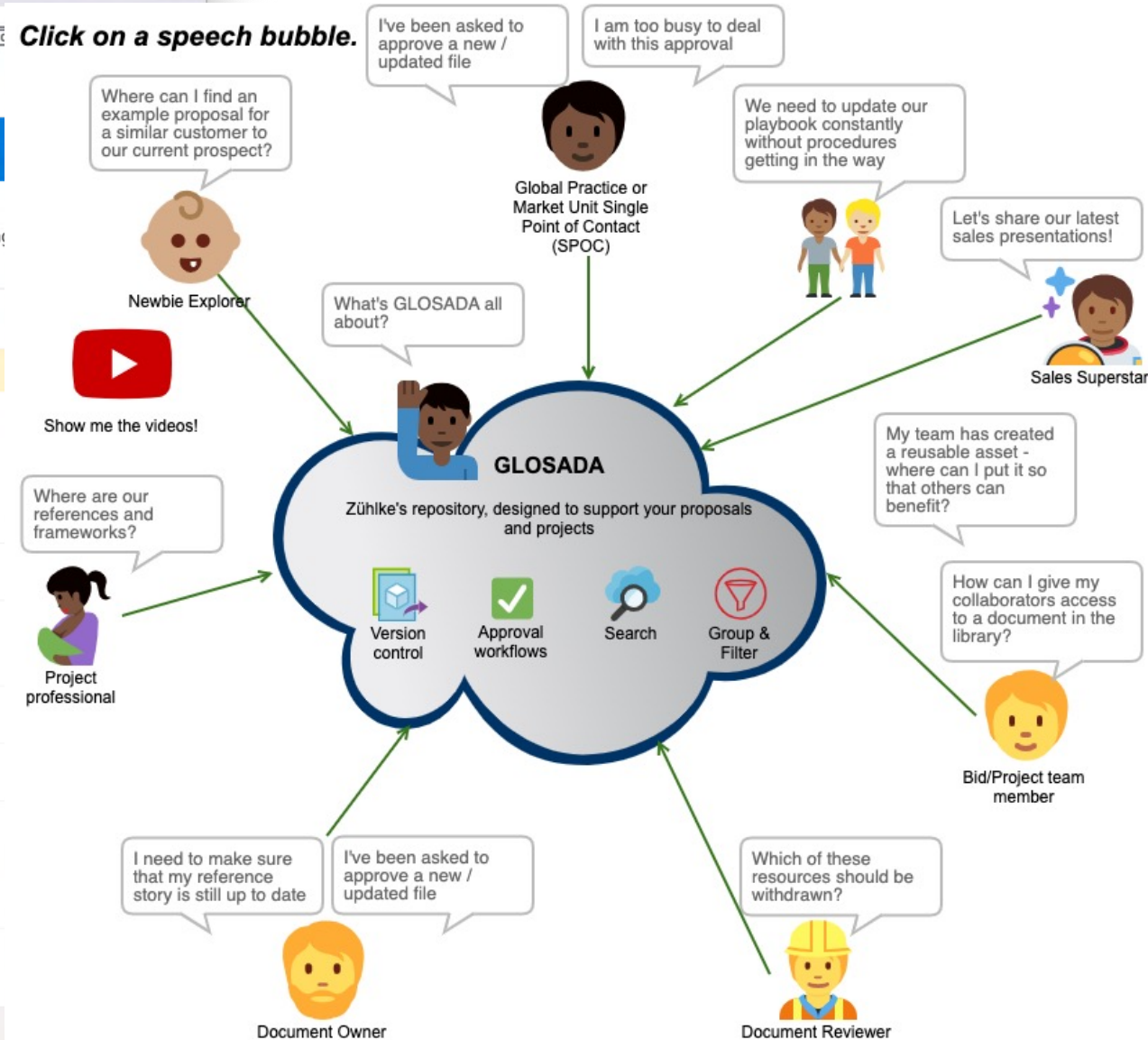
+ New Upload Edit in grid view Sync All Documents

Some files are missing required metadata. [Fix file issues now.](#)

Documents

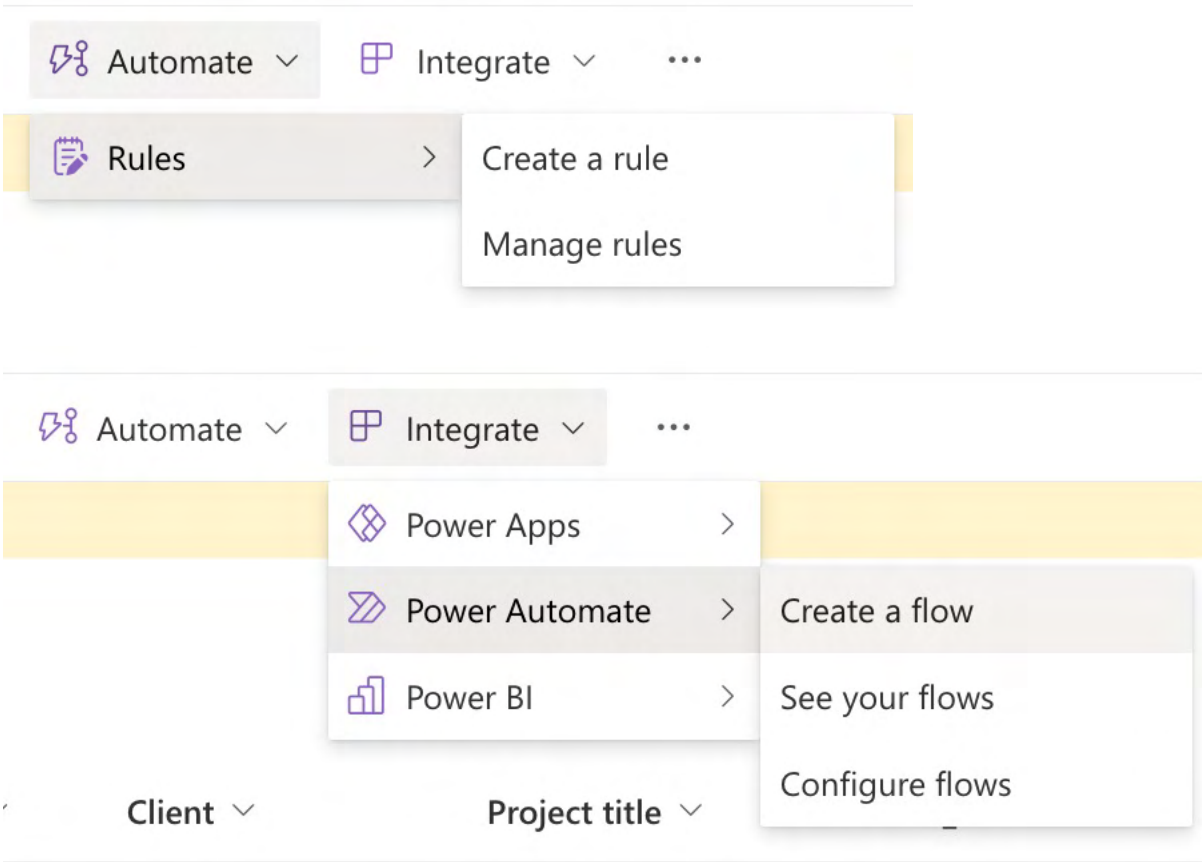
Name	Classification	Asset type	Best of
101-Ways-to-Motivate-Employees.pdf	Public	Accelerator	
20180320_TechnicalBusinessAspectsIoT.docx	Public	Other	
20180906_HackstopHandout.docx	Restricted	Accelerator	
20200527_Project_Chartering.pptx	Restricted		
20220531_OpenSourceSecurityTools.pptx	Public	Accelerator	Best of
20240403_GettingStartedWithBazel.pptx	Public	Accelerator	

Click on a speech bubble.




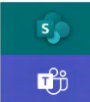
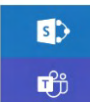


<https://confluence.zuehlke.com/display/ZCHDEX/GLOSADA>

# Easiest way to add workflows to SharePoint?



## Create a flow

Start with a template and create automated tasks between your SharePoint data and other apps. Choosing a template will open the Power Automate site where you'll finish creating your flow.

-  Request manager approval for a selected file
-  Request approval in Microsoft Teams when a SharePoint item is c...
-  Post a message to Microsoft Teams for a selected file
-  Add an Outlook task for a selected file
-  Create a Microsoft Planner task for a selected file in SharePoint

Show more

[See your flows](#)

[Learn more about Power Automate](#)



# What is Power Automate





# Power Automate in a nutshell



## Process Automation

- Orchestrate Microsoft and other services in the Cloud
- Process steps and their connections to other steps are represented as JSON objects
- Steps are called “actions”; they can have any number of inputs & 1 output (can be complex)



## Point-and-click

- Extensive library of template flows; AI support
- Adapt a template or design a flow from scratch
- Fully browser-based – no tools to install
- Available “actions” connect to most common cloud services



## Drawbacks

- No unit-test framework (but static checks)
- No version control (out of the box)
- For anything complex, you have to resort to a proprietary functional expression language
- Obscure APIs need custom HTTP requests



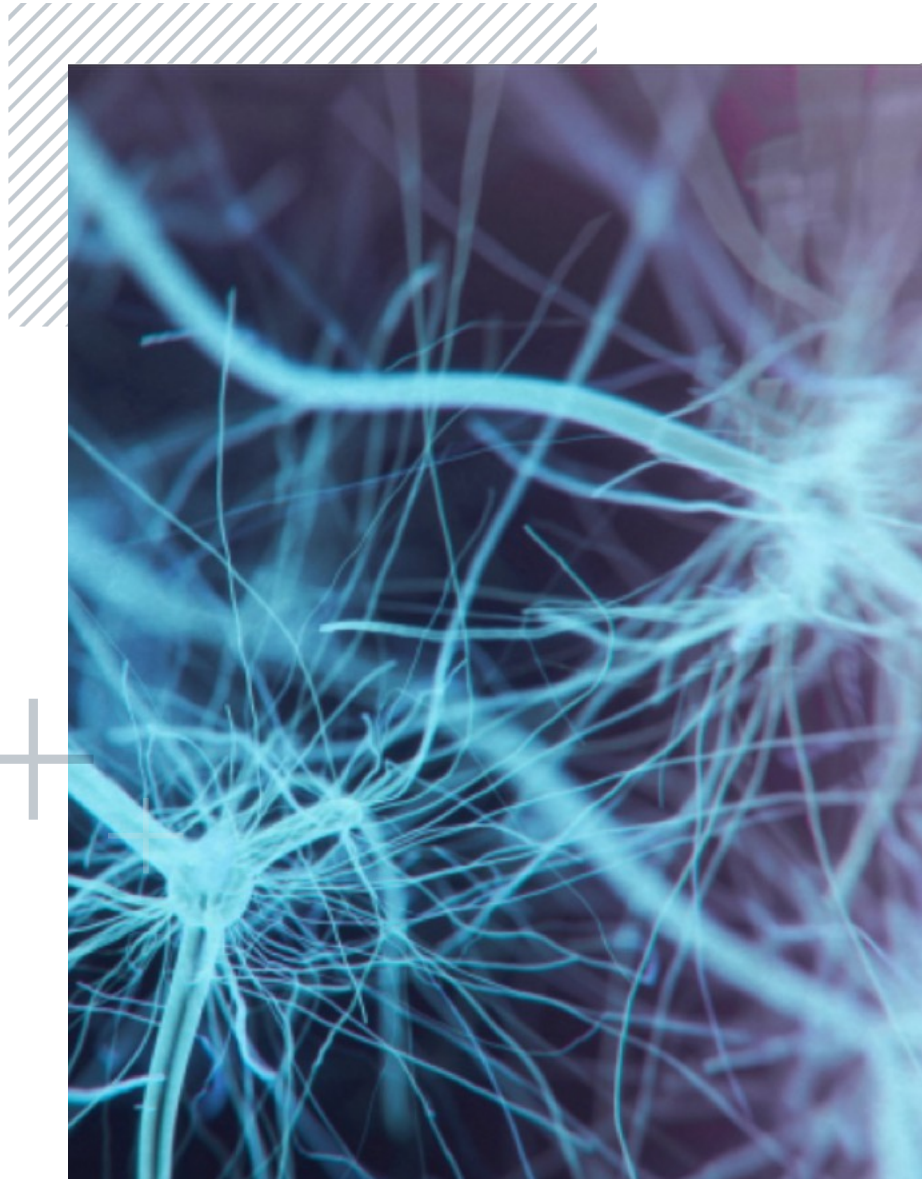
## More drawbacks

- Although logging / diagnosis is good, no active debugging → Slow cycle time
- Flow ownership and credential management
- Code comments are hard to find
- Desktop flows need a premium license



# Documentation

- `+site:process.st +"power automate"`
- <https://learn.microsoft.com/en-us/power-automate/>



# Development Environment



# Development Lifecycle



## No Unit Test Framework

- Clone the SharePoint site and its workflows
- Develop, test, debug and enhance the workflows in the safe test environment
- Copy changes manually to the production workflows
- Look out: double and triple check that everything has been copied correctly (including credentials)



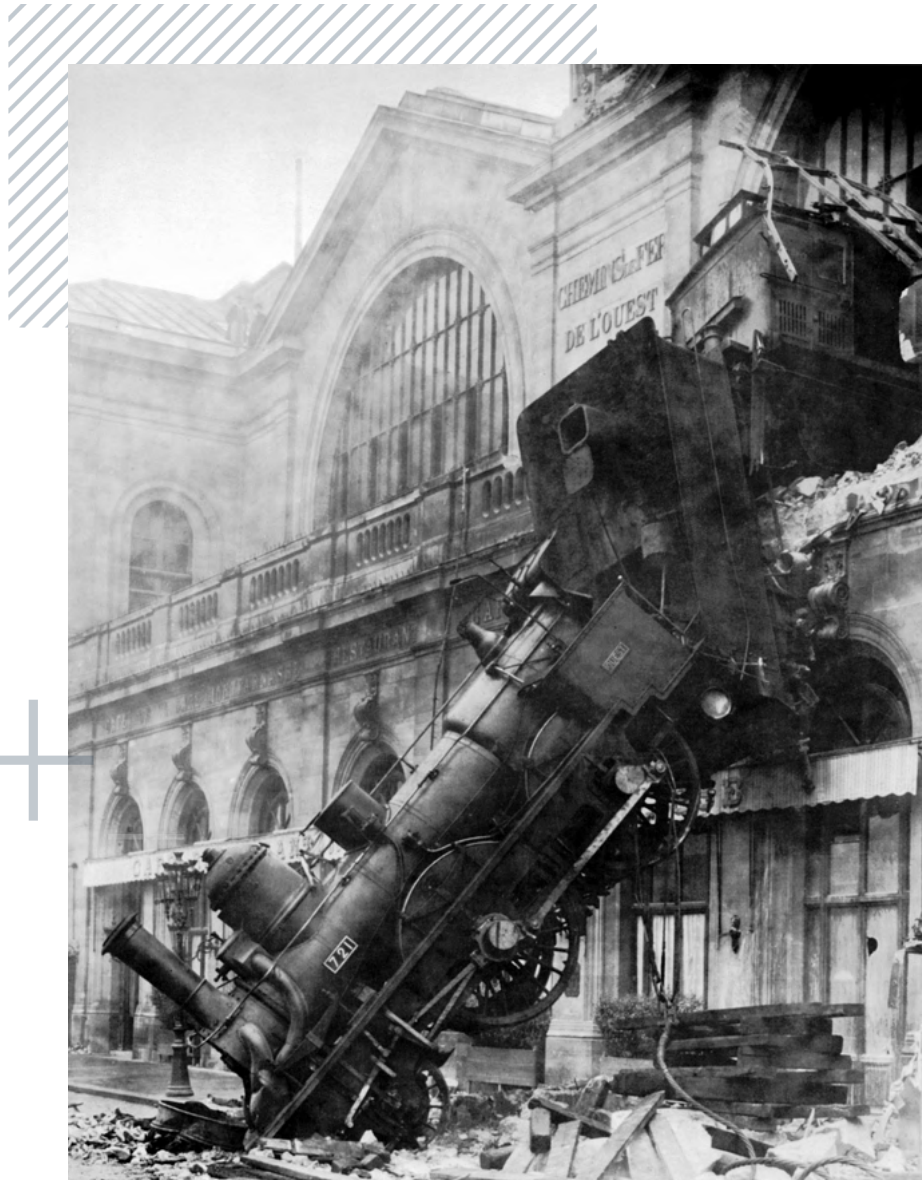
## No Version Control System

- Workflows can be exported as a safety copy in .zip form
- Workflows can be imported
- Microsoft does not recommend this approach
- Instead, Dataverse in Power Platform can implement ALM in the form of **solutions**
- Haven't had a chance to try either approach



## Development Approach

- Update the workflow
- Save the workflow
- Trigger the workflow
- See what happened
- Repeat & eventually promote
- Workflows in test env. have much shorter timeouts (minutes rather than days)
- E-mails sometimes get delayed beyond timeout



## Some gotchas

What can really catch you out

# General observations

- All names must be unique within workflow and cannot contain punctuation
- All variables are global to the workflow
  - Types: Boolean, Integer, Float, String, Object or Array
  - Actions on variables: Initialize, Set, Increment, Decrement, Append
  - “Create array” action specifically for arrays of objects
- The Compose action substitutes for stack (scoped) variables
- Once an action has been renamed from its default, its type is not obvious
  - Its icon indicates the service it relates to; type **may be** in the code view
  - Suggestion: name actions based on their type, e.g. name an “Initialize variable” action “Initialize XYZ variable”
  - For loops (“Apply to each” action), suggest “For each XYZ”
  - For branches, suggest a Boolean expression e.g. “Approval granted”



# Flow editor issues

- After creating a new flow, adding owners moves it to “Shared with me”
- Slow to open
- Sometimes the expression editor works, but sometimes not
- Copying an action or scope (even from another workflow) always appends “copy” to the name – you have to delete that and check the params/settings
- Remember to save the workflow regularly in order to validate it
  - Saving takes time (a few seconds each time)
- You can accidentally switch from “new designer” view to the classic view
- If the condition of a file has not changed, it’s worth using the test button to re-trigger the workflow (saves waiting for the sampling interval to expire)
  - Else just cause the trigger to occur again on the same or another file



# Notifications

- Some actions (e.g. Create an Approval and Post Card) hit multiple services
  - E-mail
  - Teams Chat → Workflows
  - Teams Approvals
- Rendered differently in each one
  - Markdown supported in “Create an approval”, not in “Send an email”
- Avoid spamming users, if possible
- Think very carefully about the wording and call to action
  - Recipients may be confused about what they are supposed to do & when
  - Recipients need clear information about how they can do it
  - Recipients need links to the necessary resources (i.e. where)
  - The goals of the process need to be understood (why, e.g. quality targets)

# Token troubles

- Connections between a workflow and a cloud service are automatically authorised using a long-lived token
- Tokens are generated by supplying credentials for the owner of the connection through the workflow designer tool
  - The owner can be a normal user, in which case multi-factor authentication may be required
  - We used a service account, which the IT department doesn't like much
- Tokens get refreshed from time to time in normal use
- If a connection is not used for a few weeks, the token times out
  - Connection may only be used on a rarely-visited branch of the logic
  - Workflows then fail if they try to use that connection



# Error Handling

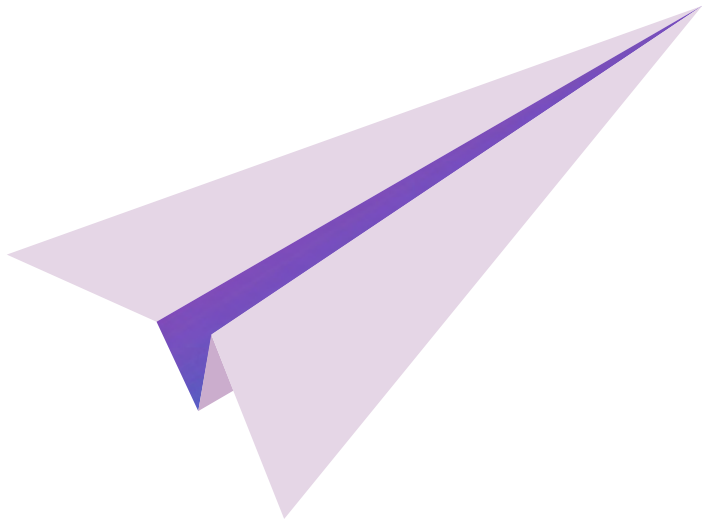
- Errors will occur unexpectedly, due to unforeseen or hard-to-test conditions
  - For example, we found that “Get user profile” action fails if no such user
- Tailor the retry strategy (in Settings) to avoid long timeouts on failure
- Use **Scopes** for Try and Catch blocks
- If there are multiple sources for a parameter, use the earliest one in the flow
- Failure conditions are cumulative
  - Even if you handled an exception within a scope, the condition applies to the scope as a whole, so you still need to catch it somehow
- Report failure via e-mail and/or Teams
  - Include link to the workflow instance so that it can be diagnosed
  - Think carefully about who needs to know
  - Call to action (even the subject line) should be tailored to the recipient(s)

# Visibility – a SharePoint issue

- Files in the recycle bin are detached from their properties: restore to retrieve
- New/updated files (drafts) should be invisible until approved (published)
- SharePoint supports different visibility options
  - We chose “visible to author and approvers”
  - It turns out that “approvers” means site administrators, not the list of people whose e-mail is supplied to the “create an approval” action
- The workaround
  - As part of the workflow, explicitly add the approvers to the “design” role on the file to be approved
  - This not only allows approvers to open the file for approval purposes
  - It also gives them visibility of the draft version in the document library with all its properties



# Conclusions



- Power Automate is robust and capable
- A bit slow in execution sometimes
- Anything beyond the simplest workflow needs expertise to program and test
- If asked to do a similar system in future, I'd think seriously about using a high level language such as Python with service API libraries, which can be mocked

# Questions?

