# British Computer Society
## The Chartered Institute for IT

# Consultancy Specialist Group

# Webinar

## Workarounds – Their Impact and Consequences

Martin White FRSC FBCS HonFCLIP

20th April 2023

# Workarounds and Shadow IT
# The benefits and the risks

Martin White SearchResearch.online

BCS Consultancy specialist group

20 April 2023

Martin.White@IntranetFocus.com

# Martin White

- Principal Analyst, SearchResearch Online
- Visiting Professor, Information School, University of Sheffield
- Member of The Search Network
- Author of Making Search Work (2008) and Enterprise Search (2015) and six (!) other books
- 25 years of experience working on intranet and enterprise search projects, primarily in the engineering, legal, NGO and pharmaceutical sectors

# The roadmap

#1 Workarounds are everywhere!

#2 Chronology, definitions and implementations

#3 The origins of workarounds

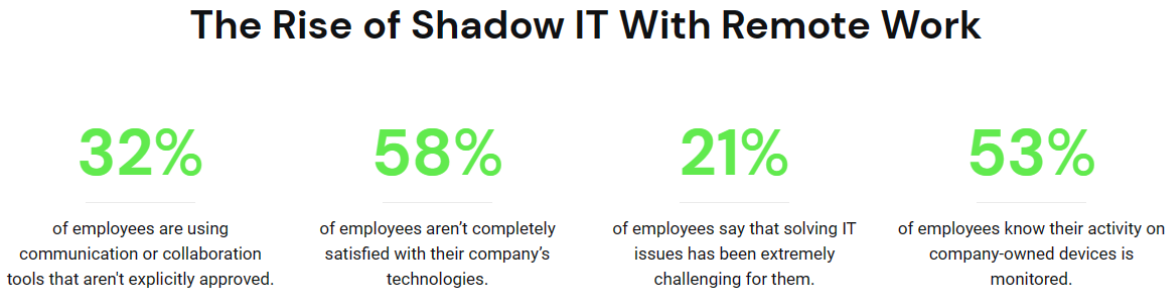
#4 Processes and procedures

#5 Then along Came ChatGPT

#6 Implications for consultants

# Workarounds are everywhere

- 70% Of Workers Using ChatGPT At Work Are Not Telling Their Boss; Overall Usage Among Professionals Jumps To 43%
  - https://www.fishbowlapp.com/insights/70-percent-of-workers-using-chatgpt-at-work-are-not-telling-their-boss/




- Every time you cut-and-paste from another document into a document you are working on you are using a workaround!

# Sheffield Pressbooks initiative


https://sheffield.pressbooks.pub/


# Workarounds and shadow IT
# The benefits and the risks

- To the Moon…and back
- The diversity of workarounds
- A chronology of definitions
- Making the invisible visible
- Putting the enterprise into enterprise applications
- Workarounds in enterprise applications
- Shadow IT
- Workarounds in clinical systems
- Workarounds in information management
- Risks and technical debt
- Digital workplaces
- The impact of AI
- The past, the present and the future


Due for release on the Pressbooks site by the end of April

# The roadmap

#1 Workarounds are everywhere!

#2 Chronology, definitions and implementations

#3 The origins of workarounds

#4 Processes and procedures

#5 Then along Came ChatGPT

#6 Implications for consultants

# A brief chronology

- 1368 The Observance of the Due Process of Law Edward III
- Appears in the Constitution of the United States as the Fifth Amendment
- Initial use of ‘workaround’ in the US aerospace sector from 1961
- Research papers by Suchman, Gerson and Star, and Gasser in the early 1980s concerned about office automation impacts
- Shadow IT emerges as a topic from around 2012, about the same time as Business Process Management became a mainstream IT application
- Significant research from 2014 onwards on definitions and impacts

# The warnings!

## Office Procedure as Practical Action: Models of Work and System Design

LUCY A. SUCHMAN
XEROX Palo Alto Research Center

---

The design of office technology relies upon underlying conceptions of human organization and action. The goal of building office information systems requires a representation of office work and its relevant objects. The concern of this paper is that although system designers recognize the centrality of procedural tasks in the office, they tend to ignore the actual work involved in accomplishing those tasks.

An earlier version of this paper was presented at the Workshop on Research in Office Semantics, June 15–18, 1980, Chatham, Cape Cod, Mass.

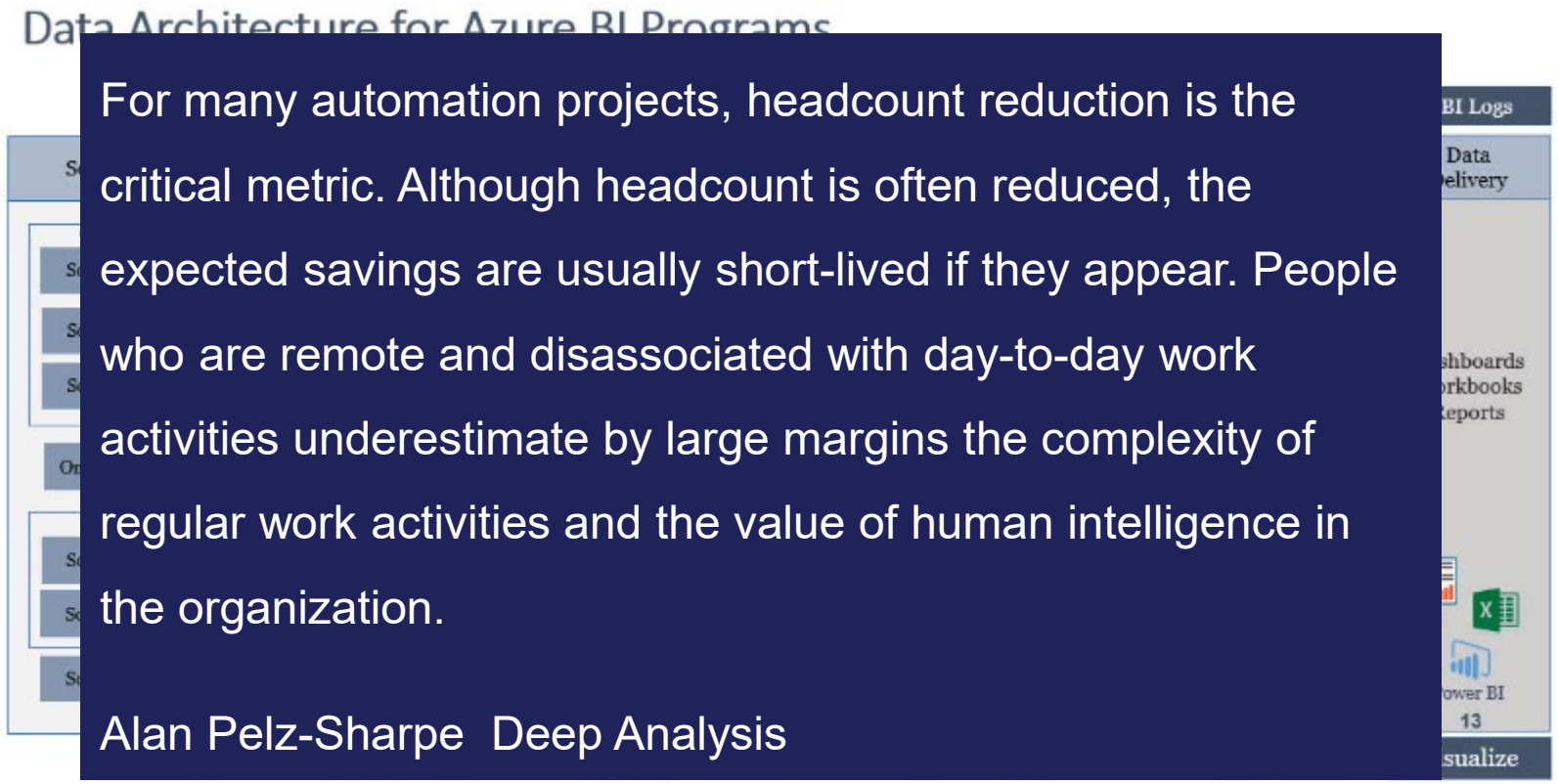
# Working definitions

- “A **workaround** is a goal-driven adaptation, improvisation, or other change to one or more aspects of an existing work system in order to overcome, bypass, or minimize the impact of obstacles, exceptions, anomalies, mishaps, established practices, management expectations, or structural constraints that are perceived as preventing that work system or its participants from achieving a desired level of efficiency, effectiveness, or other organizational or personal goals.” (Stephen Alter 2014)
- “**Feral practices** can be broadly defined as usage of information technology which deviates from organizational norms and exists beyond the control and/or knowledge of the organizational IT management.” (Shubhankar Thatte, Nick Grainger and Judy McKay 2012)
- “**Shadow IT** describes the supplement of “official” IT by several, autonomous developed IT systems, processes and organizational units, which are located in the business departments. These systems are generally not known, supported and accepted by the official IT department.” (Stephen Zimmerman 2012)

# Enterprise system implementation

- EIS (Enterprise Information System) 1990s
  - Usually, several decades of prior experience
  - Primarily focused on data-based processes
  - Impact of errors being introduced unlikely to have ‘customer’ implications
- EHR (Electronic Health Record) 2010s
  - No prior experience, and a transition from paper to digital
  - Extensive use of fielded and non-fielded text
  - Potentially an immediate impact on the well-being of a patient

# Complexity rules!




For many automation projects, headcount reduction is the critical metric. Although headcount is often reduced, the expected savings are usually short-lived if they appear. People who are remote and disassociated with day-to-day work activities underestimate by large margins the complexity of regular work activities and the value of human intelligence in the organization.

Alan Pelz-Sharpe  Deep Analysis

# Functional and non-functional

- Functional specifications are developed by business analysts
- Little attention is paid to non-functional requirements which are
  - Difficult to specify
  - Are very dependent on the skills of an individual employee
    - Tenure - How long have people been using the application
    - Frequency - How frequently do people use the application?
    - Depth - How many features/functions of an application do people use?
  - Cannot be assessed until well into the implementation stage
  - Cannot easily be addressed without significant technical debt and time
  - Are a core source of workarounds and shadow IT

# The roadmap

#1 Workarounds are everywhere!

#2 Chronology, definitions and implementations

#3 The origins of workarounds

#4 Processes and procedures

#5 Then along Came ChatGPT

#6 Implications for consultants

# Patterns of workaround adoption

- Overcome inadequate functionality
- Bypass obstacles built into existing routines
- Bypass or overcome transient obstacles due to anomalies or mishaps
- Respond to mishaps with quick fixes which then become permanent
- Augment existing routines without having to develop new resources (logins and logouts!)
- Support a colleague in difficulty
- Demonstrate expertise and innovation
- Cope with the loss of a colleague
- Overcome an upstream workaround
- Self-satisfaction
- Meet unreasonable targets (productivity)
- Game the system
- Improve the customer experience
- Strike a blow against corporate edicts
- Reduce stress
- Feel in-control

( Partially based on Alter 2014)

# Psychological stress

**Innovation is not enough: climates for initiative and psychological safety, process innovations, and firm performance**

**MARKUS BAER* AND MICHAEL FRESE**

*Work and Organizational Psychology, University of Giessen, Giessen, Germany*

2003

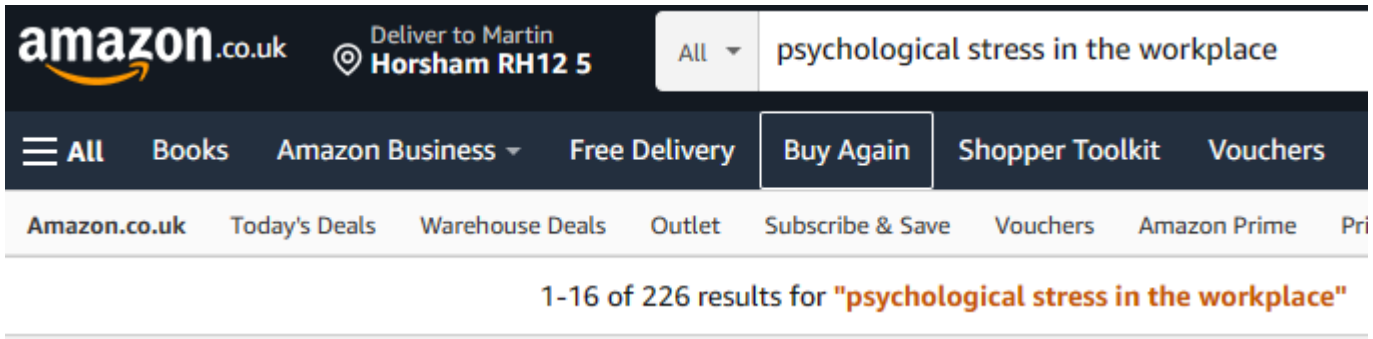
*Annual Review of Organizational Psychology and Organizational Behavior*

Psychological Safety Comes of Age: Observed Themes in an Established Literature

Amy C. Edmondson and Derrick P. Bransby

Harvard Business School, Harvard University, Boston, Massachusetts, USA; email: aedmondson@hbs.edu, dbransby@hbs.edu

2023



# Discovery options

- Quantitative – using BPM/Process Mining application
  - Based primarily on chronology and keystrokes
  - Assumes that the process is correctly defined
  - Is there an issue with identifying the employee?
  - The employee may not be aware they are using a workaround!
- Qualitative – using ethnographic methodologies and a ‘design science’ framework
  - How to choose the interviewees, and will they disclose the workaround
  - Very difficult to scale and depth of workarounds from a small sample
  - Using in-house resources can bias the outcomes away from an appropriate level of transparency

# How prevalent is shadow IT?

## The Rise of Shadow IT With Remote Work

**32%**
of employees are using communication or collaboration tools that aren't explicitly approved.

**58%**
of employees aren't completely satisfied with their company's technologies.

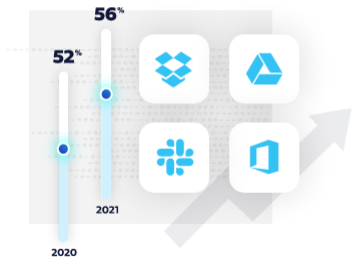
**21%**
of employees say that solving IT issues has been extremely challenging for them.

**53%**
of employees know their activity on company-owned devices is monitored.

- 52% of survey respondents saying individual employees are purchasing apps without IT's knowledge
- 36% saying the same is happening with line of business (LOB) managers

## 5 Shadow IT stats that businesses should know

### 1. Shadow IT makes up the majority of the app portfolio




In 2020, 52% of business applications were Shadow IT. In 2021, the number of apps not managed or owned by IT grew to 56% (an increase of 8%).

It's predictable that companies would see an increase in Shadow IT over the last year, considering the rise of hybrid and remote work options. Many remote employees are trying to maximize their productivity, and it's easier to search for and select apps as the need arises rather than wait for IT's approval and support.

But companies may be surprised to discover that Shadow IT now accounts for more of their app portfolio than tools sanctioned by IT. This stat sums up how easy it now is for employees to sign up for business tools that become — you guessed it — Shadow IT.

## Shadow IT usage statistics

With shadow IT becoming more popular in the workplace, it is incredible to see just how many people are using software that was not approved by IT. As more cloud software becomes available you will see a rise in these statistics in the coming years.

- 80% of workers admit to using SaaS applications at work without getting approval from IT.
- Shadow IT cloud usages estimated to be 10x the size of known cloud usage.
- The average company has 975 unknown cloud services.
- Most companies have over 108 known cloud services.
- 35% of employees say they need to work around their company's security policy to get their job done.
- Roughly 21% of organizations do not have a policy around the use of new technology.
- 67% of teams have introduced their own collaboration tools into an organization.

# How prevalent are workarounds?

- No one knows!
- Employees may be willing to comment on their use of shadow IT to an external survey as it only reveals software package names
- It is MUCH more difficult to survey the prevalence of workarounds as the respondent is talking about internal process failures
- There are (usually) no incentives to disclosing the development and use of workarounds – indeed the ‘misuse’ could have serious consequences for an individual employee or team
- Even a very small number of interviewees (circa 15-20) in a research project present a range of workarounds.
- As this constitutes a quasi-random sample, scaling this up across the enterprise could result in a substantial collection of workarounds
-

# The roadmap

#1 Workarounds are everywhere!

#2 Chronology, definitions and implementations

#3 Categorising workarounds

#4 Processes and procedures

#5 Then along Came ChatGPT

#6 Implications for consultants

# Process vs procedure

- As a rule of thumb 20% of enterprise content is structured data and 80% is unstructured information
- Quantitative techniques are built around process maps, but in an ‘office’ environment procedures take precedence over processes and the focus is on making informed decisions
- Usually there is a defined ‘delivery date’ but no specific intermediate dates for progress chasing



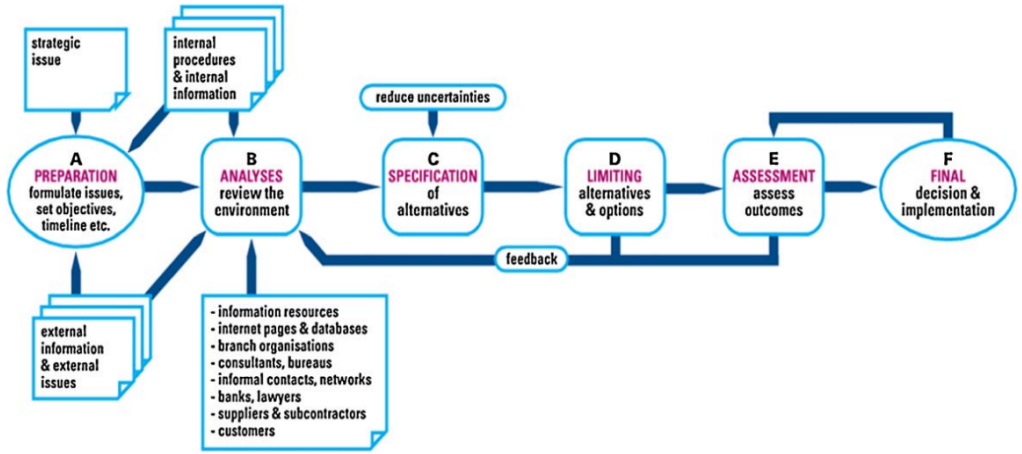



**Fig. 1.** Model of the phases of a rational decision-making process. Rounded boxes indicate the five phases in the decision process; square boxes contain parameters that provide input for the indicated actions. Arrows indicate the main direction of interactions.

# Information workarounds

- One of the major challenges of a workaround is that a negative impact may not be apparent until much later in the process or procedure
- The impact may only be apparent when there is an external compliance check
  - ISO27001 compliance for shadow IT workarounds (USB sticks and smart phones)
  - ISO9001 for process quality (but not information quality!)
  - Financial audits, where the workaround may be an outcome of fraud or malfeasance
- Tracking back to find the weak link will be time-consuming and embarrassing and of course the damage cannot easily be rectified.

# Assessing the risks and rewards

- At a top level there is a spectrum of workarounds
  - A source of innovation in process and procedure development
  - Have no immediate implications and are localized in their impact
  - Can be a major source of corporate risk
- One of the major differences in approach between EIS and EHR workaround management is that in EIS implementation workarounds are generally regarded as high risk and having no benefits
- In EHR applications the risks are very high (patient outcome) but there is a strong focus on identifying changes and enhancements
- Notably nurses are regarded as core to workaround identification and supporting design improvements.
- Extensive use is made of academic research, which is available to, and appreciated by, senior clinicians

# Corporate maturity model

| | |
|---|---|
| We have a corporate policy towards workarounds and shadow IT and have established good practice policies on their use | 5 |
| We have identified high risk processes and applications and have engaged with employees to assess the current state and potential remediation of workarounds | 4 |
| We have set up a task force to formulate a workarounds policy which includes employees from across the organisation with experience of workarounds | 3 |
| We have had some internal discussions about how best to monitor the use of workarounds | 2 |
| We have taken no action to consider the potential impact and benefit of workarounds | 0 |

Note – work in progress!

# Employee maturity model

| | |
|---|---|
| The workaround I have developed has been documented with IT and shared and I have regular meetings with IT and my business manager to review its value | 5 |
| My manager has approved my workaround and we discuss its value on a regular basis | 4 |
| I have developed a workaround and shared it with colleagues but I have not shared this with my manager | 3 |
| I have developed a workaround but not shared it with anyone else | 2 |
| I gather that the way I use an enterprise application is tracked by IT and it would not be in my interests to develop a workaround | 0 |

Note – work in progress

# The roadmap

#1 Workarounds are everywhere!

#2 Chronology, definitions and implementations

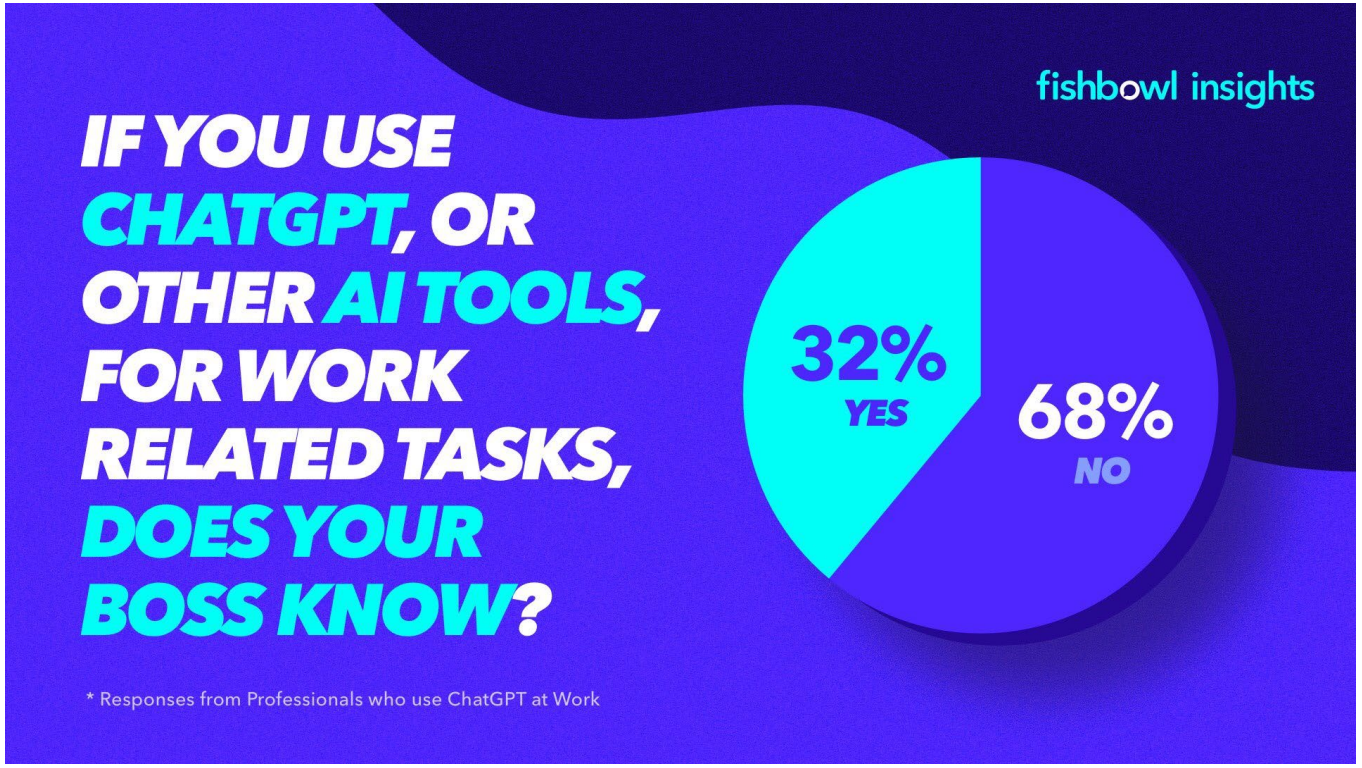
#3 Categorising workarounds

#4 Processes and procedures

#5 Then along came ChatGPT

#6 Implications for consultants

# AI implications




https://www.fishbowlapp.com/insights/70-percent-of-workers-using-chatgpt-at-work-are-not-telling-their-boss/

# “Usefully wrong”

**Unleash creativity.** With **Copilot in Word,** you can jump-start the creative process so you never start with a blank slate again. Copilot gives you a first draft to edit and iterate on — saving hours in writing, sourcing, and editing time. Sometimes Copilot will be right, other times usefully wrong — but it will always put you further ahead. You're always in control as the author, driving your unique ideas forward, prompting Copilot to shorten, rewrite or give feedback. **Copilot in PowerPoint** helps you create beautiful presentations with a simple prompt, adding relevant content from a document you made last week or last year. And with **Copilot in Excel,** you can analyze trends and create professional-looking data visualizations in seconds.

GitHub data shows that Copilot promises to unlock productivity for everyone. Among developers who use GitHub Copilot, 88% say they are more productive, 74% say that they can focus on more satisfying work, and 77% say it helps them spend less time searching for information or examples.

**Grounded in *your* business data.** AI-powered LLMs are trained on a large but limited corpus of data. The key to unlocking productivity in business lies in connecting LLMs to your business data — in a secure, compliant, privacy-preserving way. Microsoft 365 Copilot has real-time access to both your *content and context* in the Microsoft Graph. This means it generates answers anchored in your business *content* — your documents, emails, calendar, chats, meetings, contacts and other business data — and combines them with your working *context* — the meeting you're in now, the email exchanges you've had on a topic, the chat conversations you had last week — to deliver accurate, relevant, contextual responses.

https://blogs.microsoft.com/blog/2023/03/16/introducing-microsoft-365-copilot-your-copilot-for-work/

# The roadmap

#1 Workarounds are everywhere!

#2 Chronology, definitions and implementations

#3 Categorising workarounds

#4 Processes and procedures

#5 Then along came ChatGPT

#6 Implications for consultants

# Implications for consulting projects

- What is the ethos towards workarounds and shadow IT?
- Is there a balance between quantitative and qualitative discovery – or is the client flying blind?
- Are processes and procedures both being addressed?
- Are the risks and benefits associated with them fully assessed?
- In particular, to what extent are they seen as a basis for innovation?
- Could workarounds and shadow IT affect the outcomes of your project, potentially with the blame being laid on the consultant?

# Who owns the problem?
# Who benefits from the opportunities?

- At a base level it should be down to IT managers to understand the scale and purpose of workarounds and shadow IT
- But the use of both might indicate that IT is not specifying and implementing high quality systems
- Line managers may have concerns but may not be able to share these and will not be able to take appropriate action
- HR should be concerned as high levels of stress are not compatible with an engaged and productive workforce
- Risk managers should be concerned as the impacts of workaround risks may not be reflected in the corporate risk register, the risk appetite of the organisation and the down-grading of the reputational risk to the organisation

# In conclusion

- It is likely that workarounds and shadow IT are present in all organisations
- BPM/PM technology is capable of indicating the scale of occurrence but not of impact, nor can it define solutions. The scale of their impact is probably unknown and so the potential risks and benefits will not be appreciated, especially with information-rich workarounds
- There are unlikely to be quick fixes, and the impacts may be downstream of the workaround
- The arrival of generative AI offers immense opportunities for workarounds and is itself shadow IT!
- The solutions lie in transparency, a focus on assessing the user experience, positioning workarounds as a potential for systems enhancement and the inclusion of employees at all levels in the design, development and implementation of enterprise systems and their continued enhancement

# Further reading (open access)

- The integration of computing and routine work (1986) Les Gasser https://dl.acm.org/doi/pdf/10.1145/214427.214429
- Theory of workarounds. Steven Alter (2014) https://aisel.aisnet.org/cais/vol34/iss1/55/
- Seven Paradoxes of Business Process Management in a Hyper-Connected World Daniel Beverungen et al (2021) https://link.springer.com/article/10.1007/s12599-020-00646-z
- Encourage autonomy to increase individual work performance: the impact of job characteristics of workaround behavior and shadow IT usage (2022) Aline de Vargas Pinto et al https://link.springer.com/article/10.1007/s10799-022-00368-6
- Workaround Mining Lab, University of Utrecht https://www.uu.nl/en/research/intelligent-software-systems/business-process-management-and-analytics/workaround-mining-lab
- Deep Analysis https://www.deep-analysis.net/ (Consultancy specialising in BPM/PM etc)
- Design Science Research – a Short Summary (2016) https://medium.com/@pello/design-science-research-a-summary-bb538a40f669

# Time for reflection

For a copy of the slides
Martin.White@IntranetFocus.com