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# How can human experience influence the development of integrity tools and workflows?

## A case study from image screening

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# Research integrity: guiding principles

Research Integrity is integral to the work we do as publishers.

Trust is central to research integrity - maintaining that trust requires a collaborative effort with all contributors.

We are investing in innovation in publishing workflows and infrastructure to improve the researcher experience and uphold research integrity.

# Wiley's Research Integrity team

**Strategy & Policy**

- Establish the research integrity agenda; informed through case trends and engagement
- Guidance on best practices and policy

**Integrity Assurance & Case Resolution**

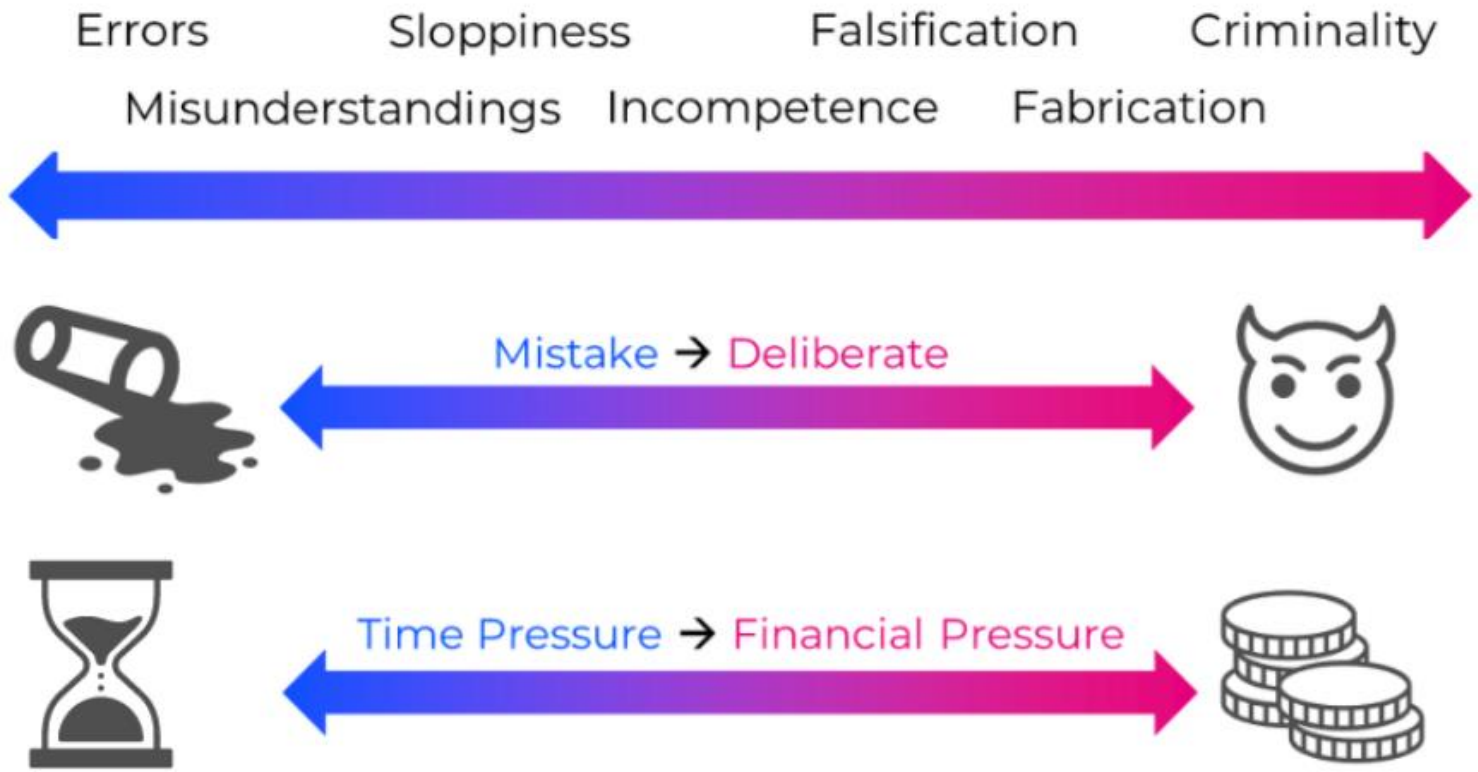
- Dedicated to the investigation and resolution of research integrity concerns
- Consistent application of policy and process

**25 full-time staff** supporting the resolution of research integrity concerns by:

- Coordination across the publishing organization to refine best practices and standards
- Monitoring trends and emerging threats to research integrity
- Working directly with editorial teams to manage and resolve research integrity concerns

**The Research Integrity team:** https://www.wiley.com/en-us/network/publishing/research-publishing/research-integrity
**Best Practice Guidelines:** https://authorservices.wiley.com/ethics-guidelines/index.html

# What issues can arise in research integrity?




**The spectrum of questionable research practices:**
https://ukrio.org/wp-content/uploads/Simon-Kolstoe-Guidance-QRPs-2023.pdf

# Approach to Image Screening

- Internal Image Screening Service launched in April 2020 on five journals, now scaled to 400+ journals.
- Takes seven minutes for a trained person to screen a manuscript using software. Most effective for certain types of images (blots, gels, photographs, cell images).
- 20 trained people can screen ~6500 manuscripts a month. Written reports are shared in Excel and added to the submission system for Editor review.
- Six percent of all manuscripts screened (at acceptance) have potential concerns regarding image manipulation.
- Image screening team also screen published articles on *ad hoc* basis; ~ 70% of checked published articles find a duplicate (usually micrographs and gel blots).

**Upholding Image Integrity:** https://www.wiley.com/en-us/network/publishing/research-publishing/trending-stories/upholding-image-integrity-wileys-image-screening-service

**Protecting your journal's reputation:** https://www.wiley.com/en-us/network/publishing/research-publishing/editors/protecting-journals-from-unethical-practice

# What have we learned?

- Could we scale and automate the process? Could we introduce it earlier in the editorial workflow?
- Training work commenced with an AI tool using 1000s of images and feedback shared from the image screening team; tool able to process information quickly and display results via a summary link.
- But potential image manipulation is just **one signal among many** that may raise concerns about research integrity. We need to look at **multiple signals** within the submission and review process.
- Multiple signals span:

  Manuscript features: content, scope, images, references
  Researcher identity: unusual activity, verification
  Peer review: suspicious activity, conflicts of interest


**Systematic manipulation of the publication process:**
https://publicationethics.org/resources/flowcharts/systematic-manipulation-publication-process

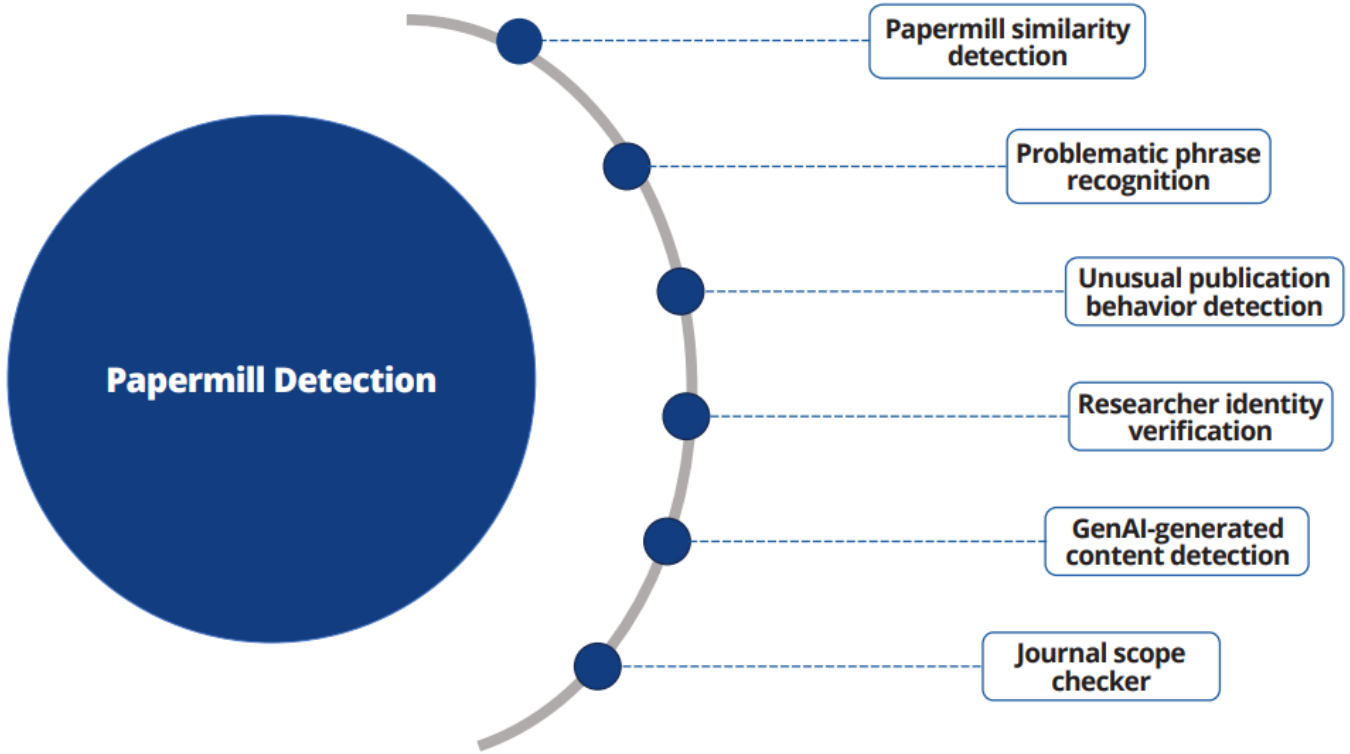
# Pivoted approach to screening

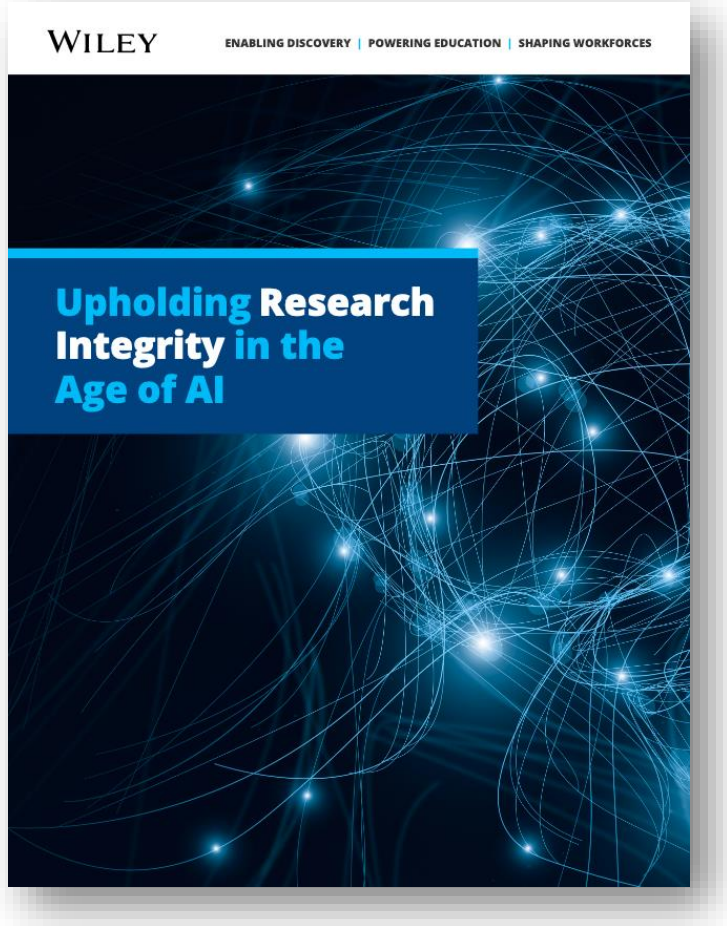
- Factors for development of tools include capacity considerations with respect to prioritization, development and optimization.
- Approaches should be product-led and evidence-based: “learn-fast, fail-fast approach”.
- Bigger picture focus on scaling the internal submission and peer review platform (Research Exchange) with a variety of custom-built and existing integrity/quality screening checks.
- Conscious decision taken to work with third parties to integrate image screening at the most appropriate point in the workflow.
- Continue to collaborate with others to address systematic manipulation at scale: **STM Integrity Hub**, **COPE**, **United2Act**.

**Tackling publication manipulation at scale:** https://www.wiley.com/en-us/network/publishing/research-publishing/open-access/hindawi-publication-manipulation-whitepaper

# Piloting a paper mill detection service

Focus on a new service that includes six distinct tools to help identify potentially compromised research content:




**Upholding Research Integrity in the Age of AI:** AI-powered Papermill Detection through Research Exchange (wiley.com)

# Reflections

*"Data helps proportion effort to need."*
Mark Hooper, Manager, Research Ethics & Integrity QUT, WCRI 2022

Publisher

| Category | Percentage |
|---|---|
| Concerns Raised by Third Parties | 16% |
| Data | 13% |
| Authorship | 10% |
| Correction of the Literature | 9% |
| Misconduct or Questionable Behavior | 9% |
| Redundant or Duplicate Publication | 8% |
| Questionable or Unethical Research | 7% |
| Consent for Publication | 6% |
| Plagiarism | 6% |
| Peer Review | 4% |
| Conflict of Interest | 3% |
| Legal Issues | 3% |
| Copyright | 2% |
| Contributorship | 1% |
| Editorial Independence | 1% |
| Research funding | 1% |

Institution – integrity office

| Category | Percentage |
|---|---|
| Research ethics | 19% |
| Authorship | 15% |
| Data | 13% |
| Publication | 13% |
| Plagiarism | 11% |
| Supervision | 9% |
| Credit / Citation | 8% |
| Conflict of Interest | 4% |
| Research funding | 4% |
| Dissemination | 2% |
| Biosafety | 2% |
| Misrepresentation | 2% |
| Collaboration | 1% |
| Peer Review | 0% |

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WCRI WORLD CONFERENCES ON RESEARCH INTEGRITY

**Reflections from WCRI 2022,** Noémie Aubert Bonn, Mark Hooper, Elizabeth Moylan, Mike Streeter
MetaArXiv Preprints | Can integrity issues encountered by a publisher inform best practices at institutions? Reflections from the World Conference on Research Integrity 2022. (osf.io)

# Reflections

*“Structured data unpicks complexity and allows us to recognise trends and patterns.”*
Sam Parker, Senior Product Manager, Wiley, 2024

- Focus on a proactive data-driven approach to support research integrity and inform decision-making.
- This may mean pivoting strategy and not being afraid to make different - and difficult - decisions.
- Collaboration with all contributor groups is essential.

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# Thank you