AI and Open Science – new tools and services

AI in the publishing editorial and production process

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"Any sufficiently **advanced technology**

is **indistinguishable from magic.**"

– ARTHUR C. CLARKE

Current AI trends in other industries

- Media—Automating formulaic business/sports reporting and use machine learning to sift through social media to verify potential news leads

- Advertising—Exploring a variety of ways to tailor messaging based on reader/user behavior

- Entertainment—Recommending other films/TV/music based on past use

- Medical—Analyzing complex health data to help physicians better diagnose and plan for a patient's future needs

Snapshot of Academic Publishing Challenges in the Past 10 years

- **A rapidly changing environment because of technology and policies around the publication of research**

- **Digital transformation – rapid transformation to digitally oriented workflows and value chain**

- **Huge volumes of Open Access Content – how to measure quality and manage discovery?**

Snapshot of Academic Publishing challenges in the past 10 years

- **Networked economy – customers beginning to define the market and the market becomes more fragmented**

- **Turnover / profitability from older business models more difficult to secure**

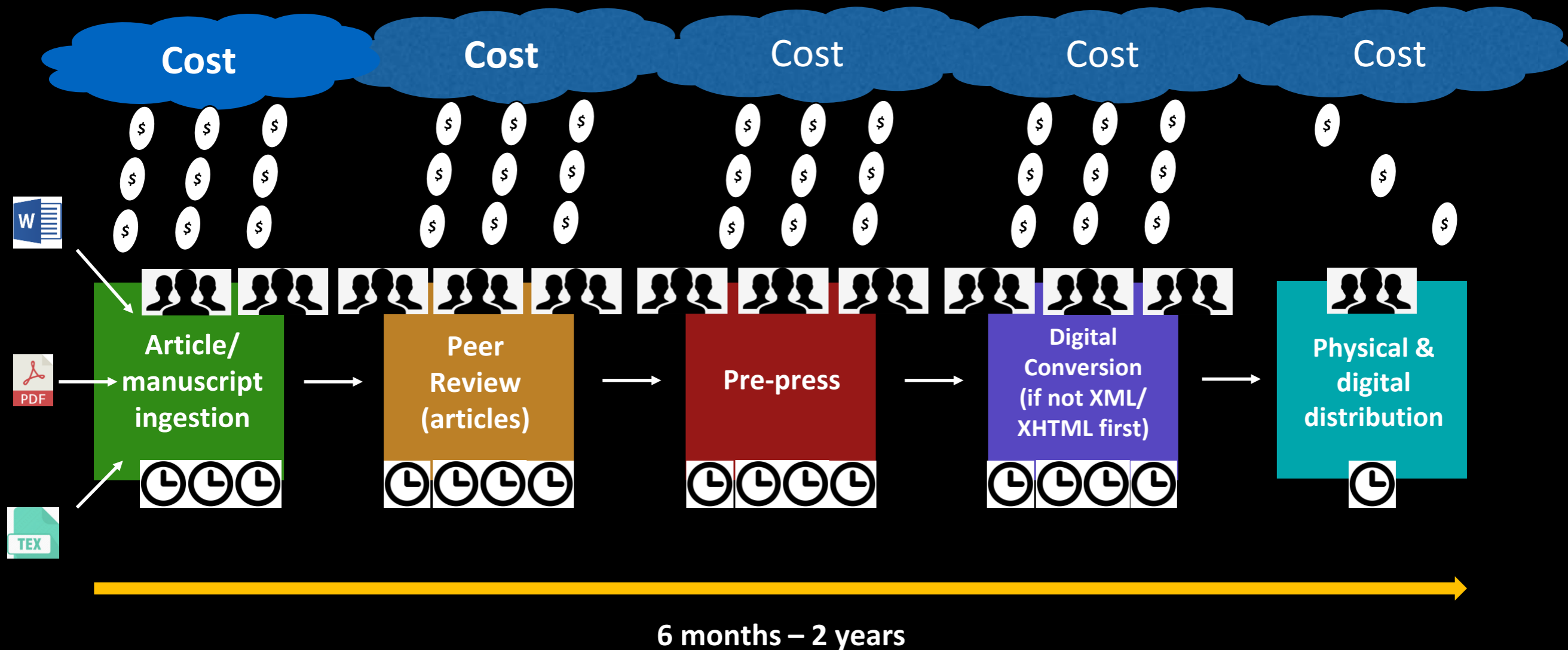- **All-important data becoming key to success in the open academic publishing lifecycle**

Snapshot of Academic Publishing opportunities in the editorial/production workflow

- **Appearance of Artificial-Intelligence-based solutions for the editorial / production workflow**

- **Machines "do the heavy lifting" in the workflow creating cost reduction, time reduction, greater efficiency**

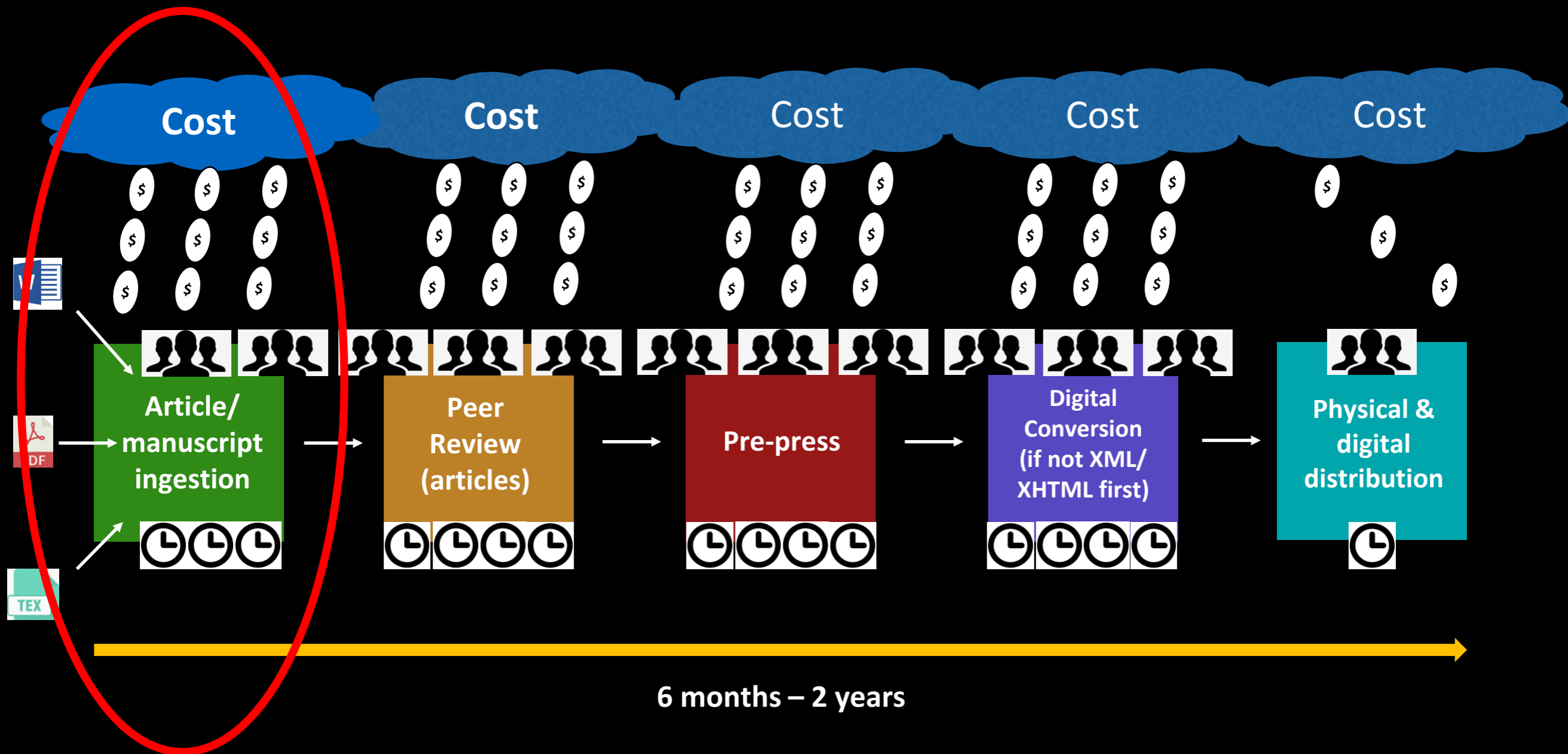- **Machines more accurate at costly and repetitive tasks**

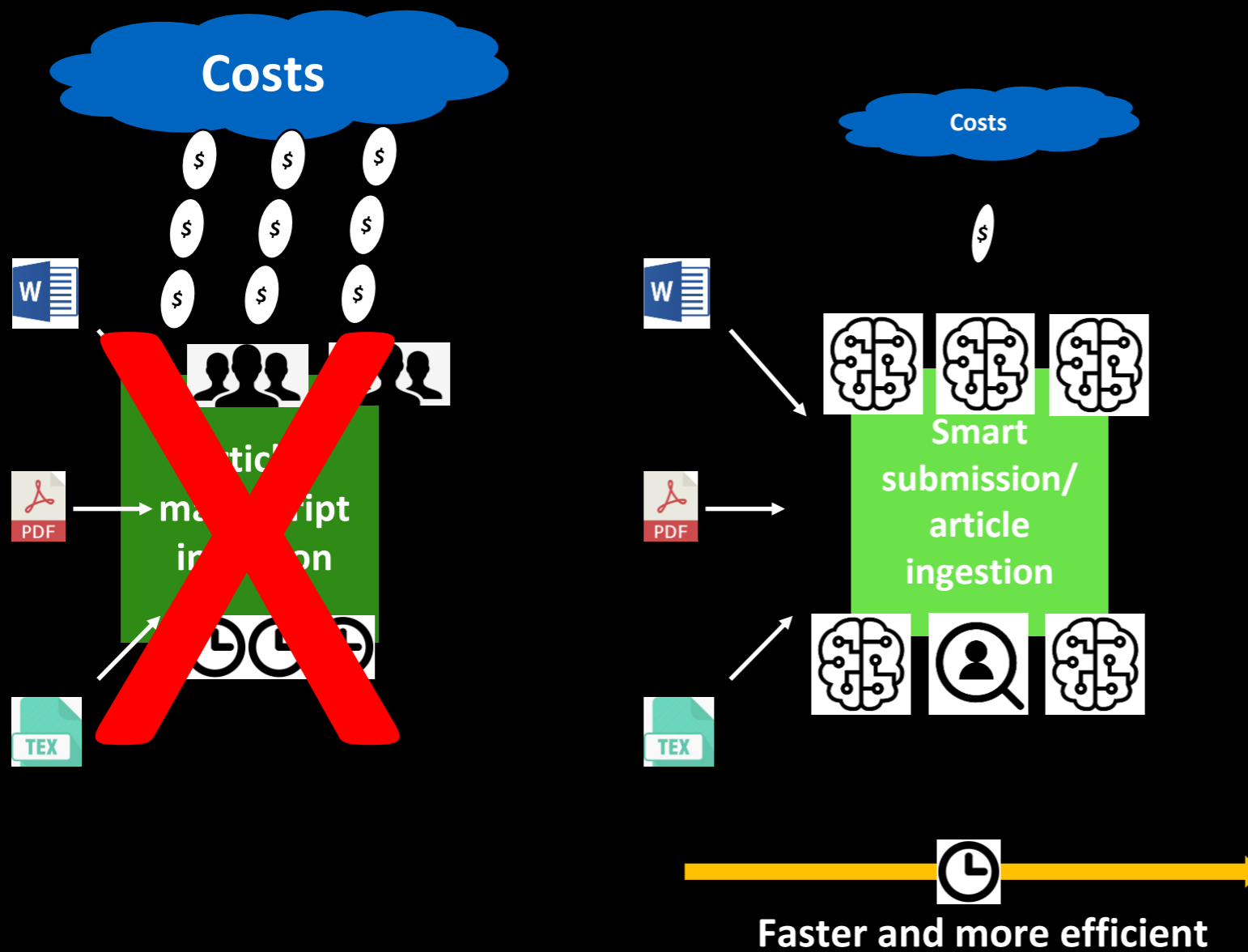# The Traditional Academic Editorial/Production Workflow – simplified!

Cost · Cost · Cost · Cost · Cost

Article/manuscript ingestion → Peer Review (articles) → Pre-press → Digital Conversion (if not XML/XHTML first) → Physical & digital distribution

6 months – 2 years

The Traditional Academic Editorial/Production Workflow – simplified!

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Introducing AI/Machine Learning to the Editorial/Production Workflow

Costs

Costs

Smart submission/ article ingestion

Faster and more efficient

- **Ingestion of Word docs, Pdfs, other as raw files or implementation of smart authoring tool for more complex content**

- **Articles automatically converted into fully tagged XML/XHTML and written to CMS**

- **Automatic creation of rich metadata**

- **Article/manuscript metrics/data - DISCOVERY**

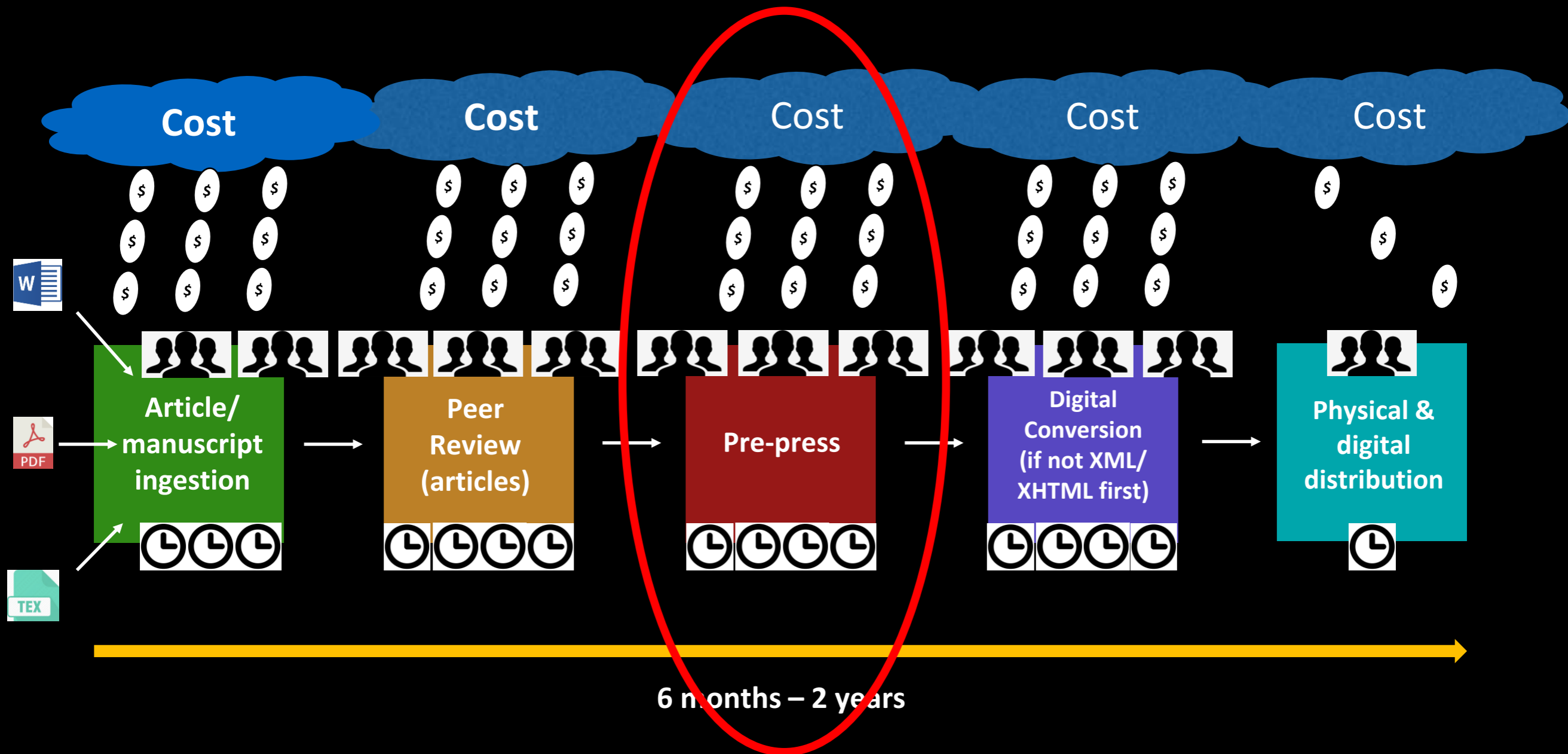The Traditional Academic Editorial/Production Workflow – simplified!

# Introducing AI/Machine Learning to the Editorial/Production Workflow

Costs

Peer review (articles)

Costs

Pre-Peer-Review article metrics

Faster and more efficient
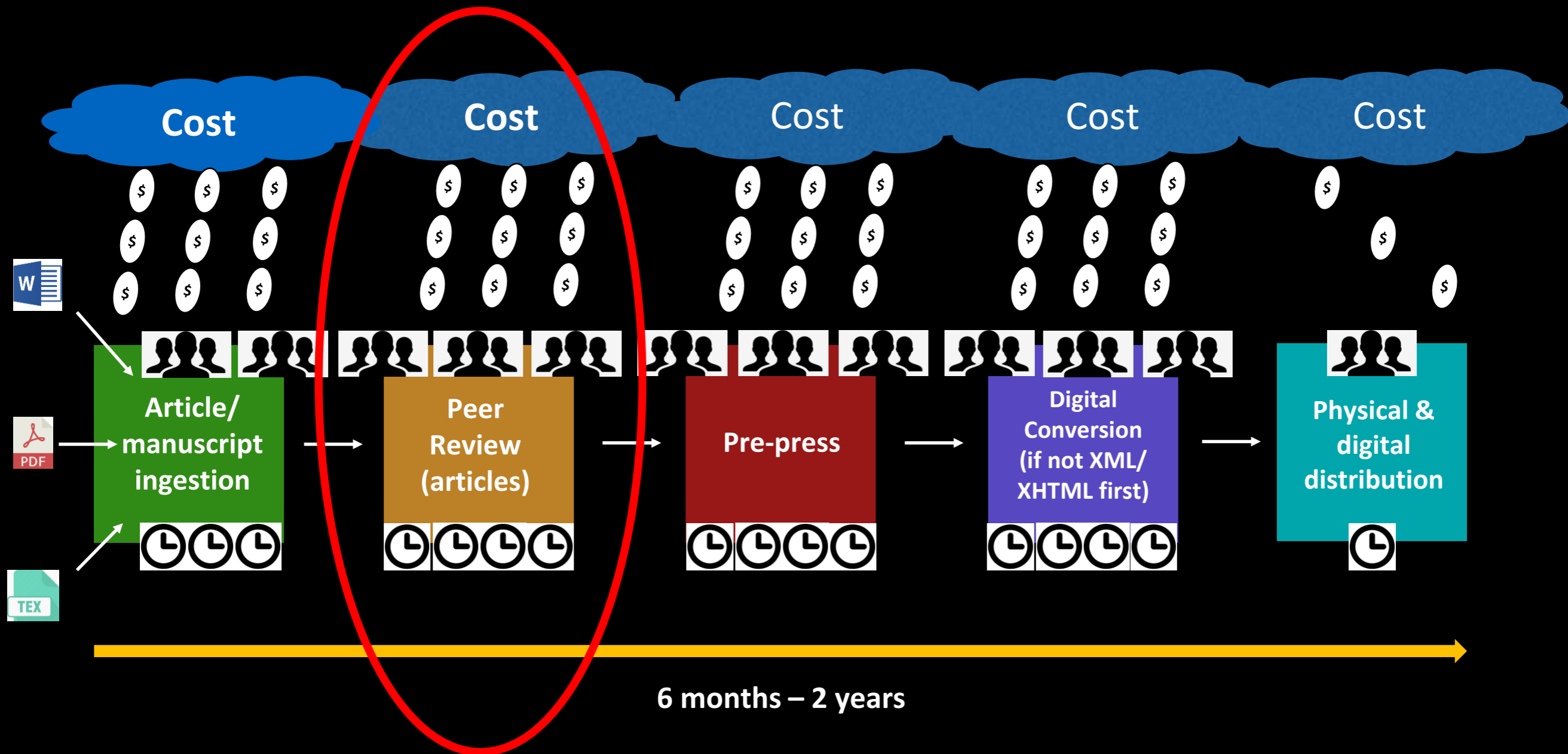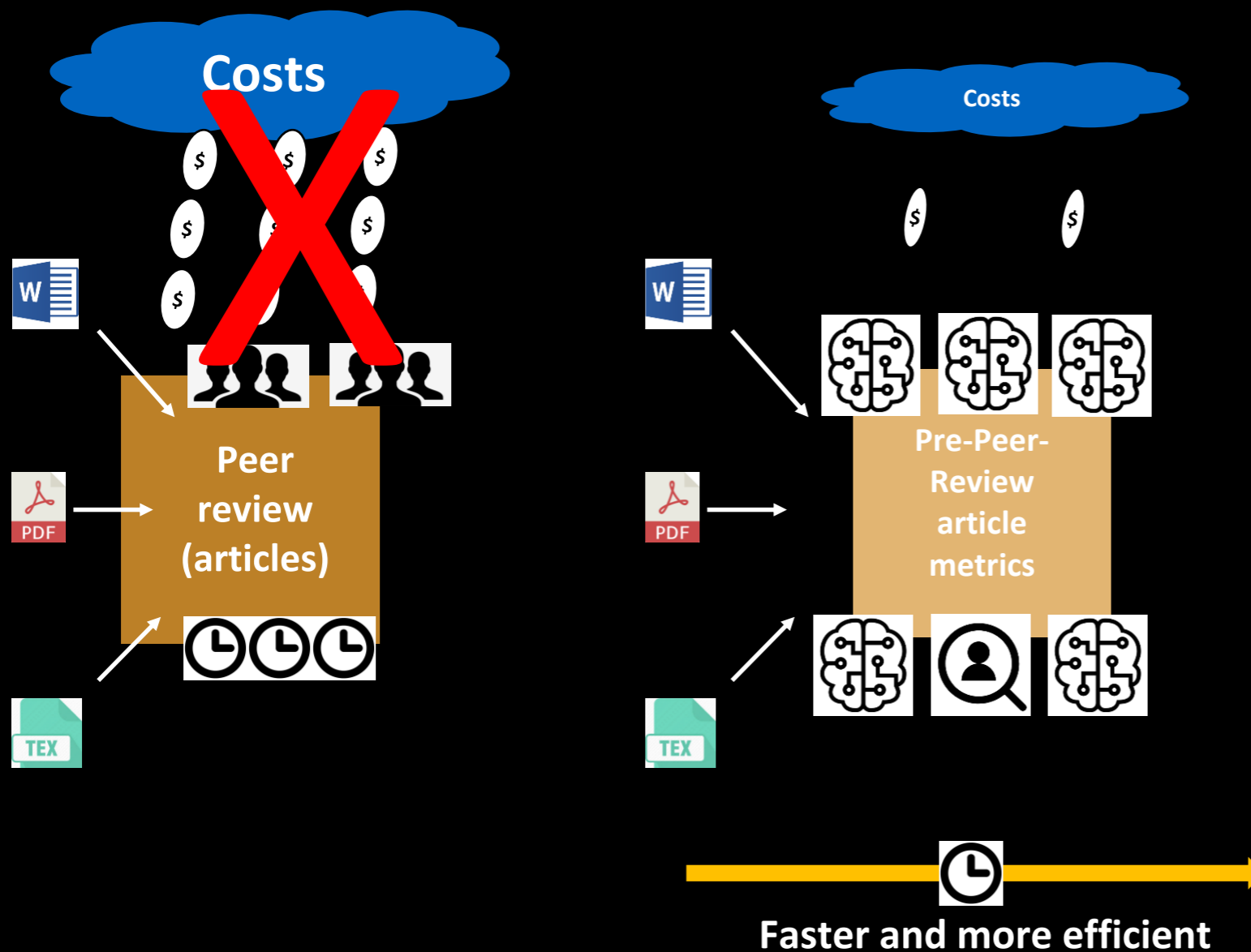
- **Detailed analysis of subject matter**

- **Pre-Peer-Review article "scoring"**

- **Formatting, structure, styling**

- **Article/manuscript metrics/data**

- **Checking of citations, weblinks**

- **Creation of large amounts of data - DISCOVERY**

Introducing AI/Machine Learning to the Editorial/Production Workflow

Costs

Costs

Pre-Press

Pre-Press

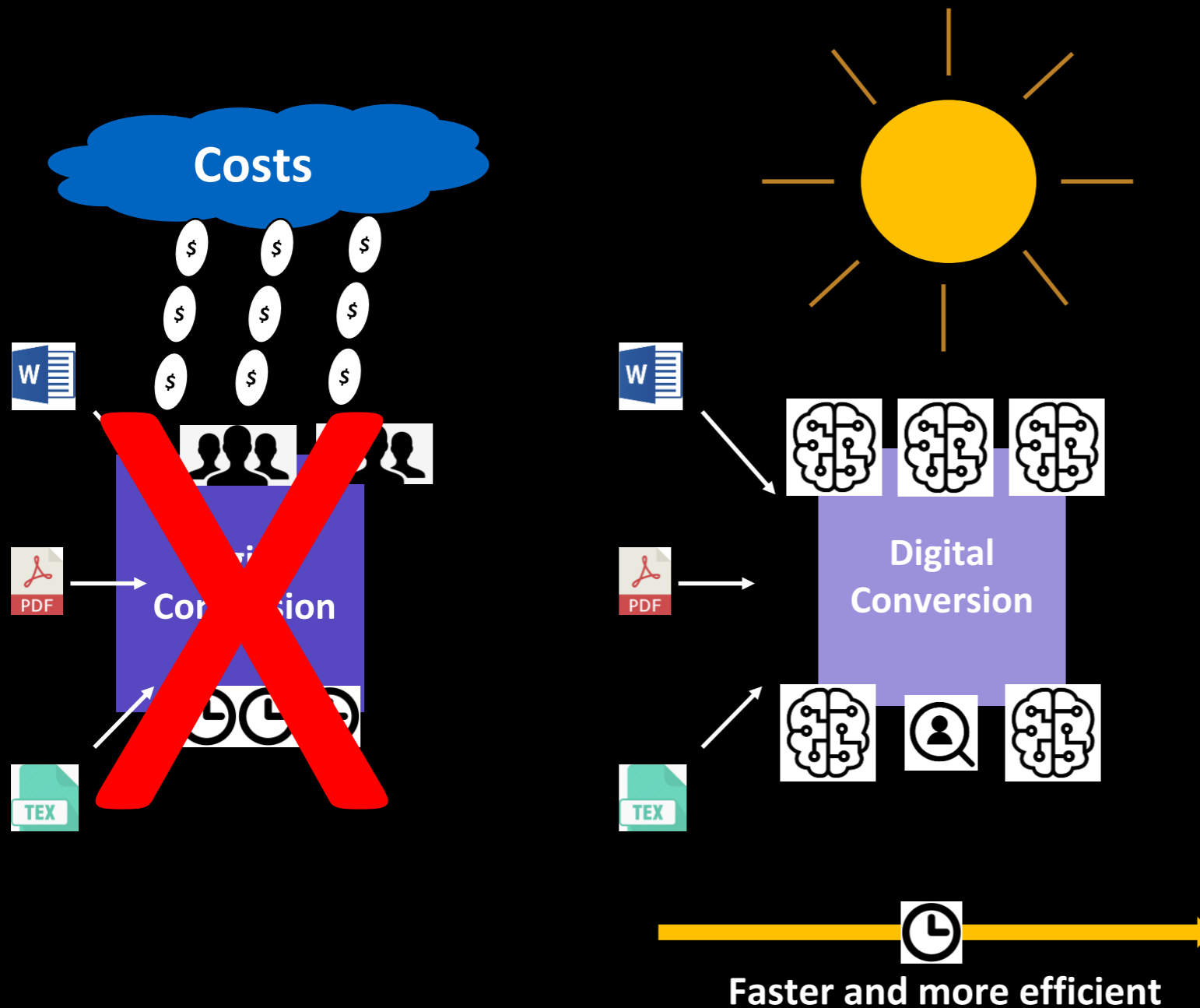**Faster and more efficient**
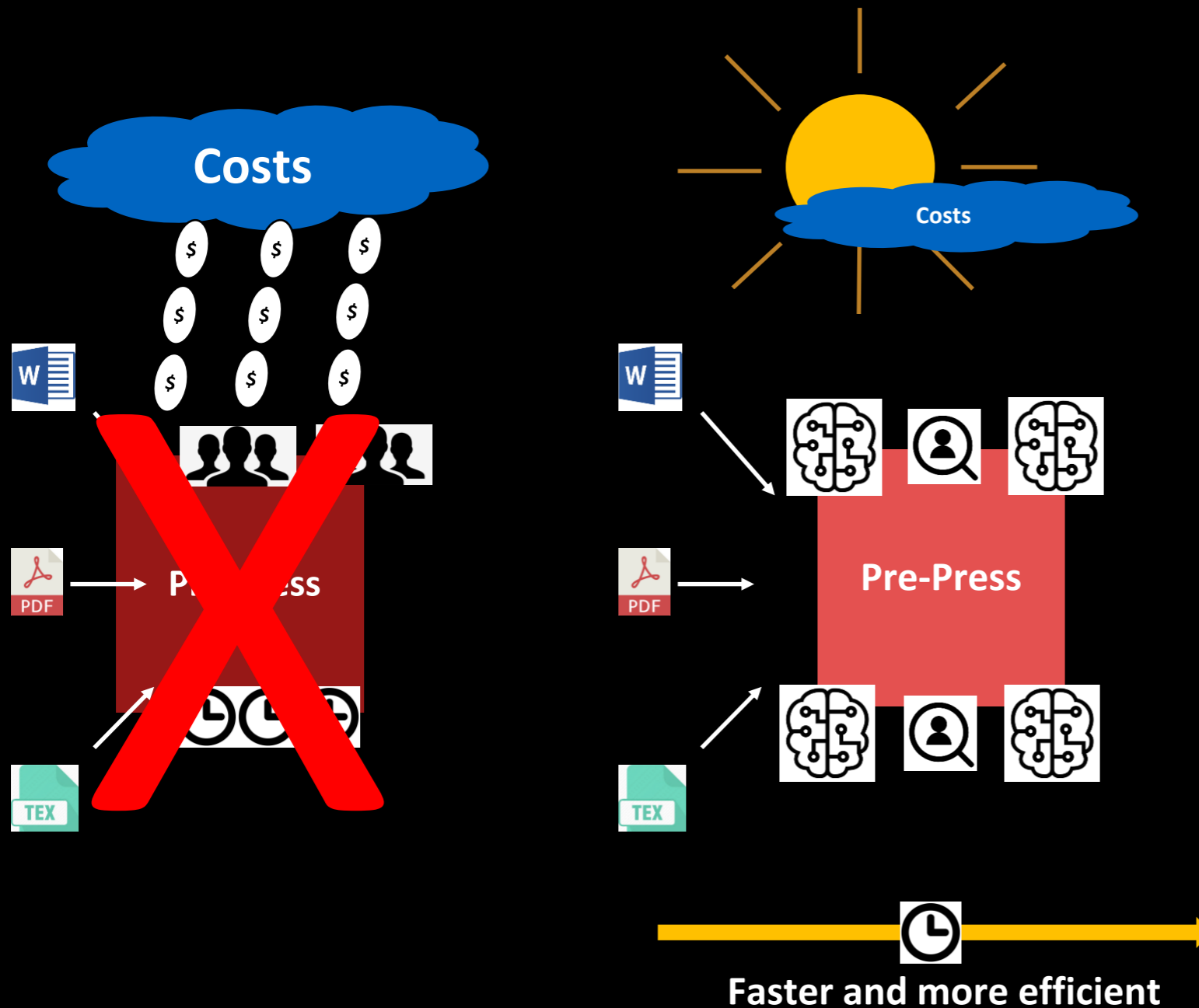
- **Huge cost reduction/efficiency created by AI**

- **Removing a lot of repetitive tasks**

- **Automatic proofing**

- **Ingestion of corrections and auto-creation of new versions**

- **Auto-creation of permissions files – future automation of rights around these**

- **Multiple outputs because CMS first**

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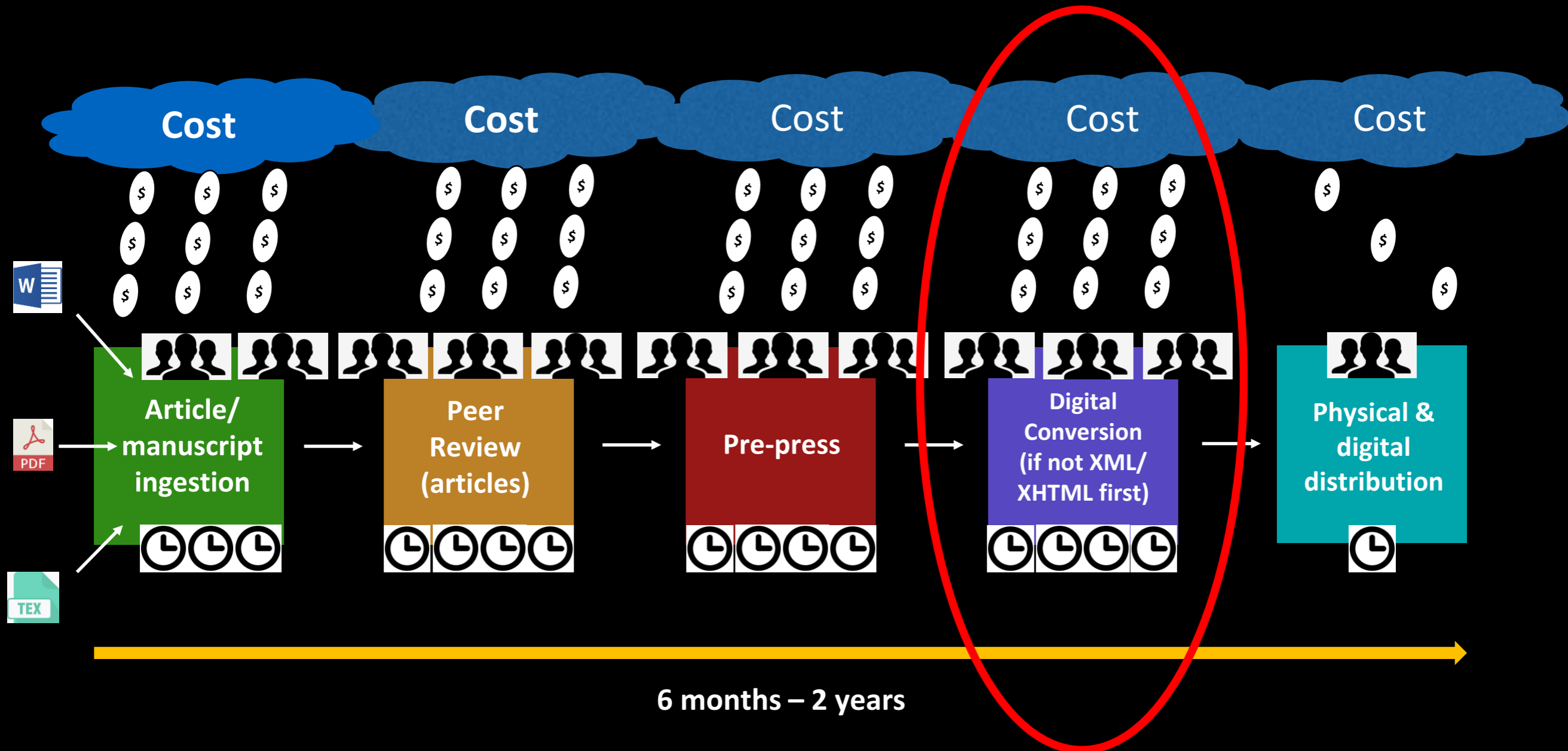
- Will be transformed in the next 3 years

- Many will move to digital first content setups therefore bypassing the need for digital conversion

- Produce once and writing to CMS first allows for any format to be reproduced, many automatically where there is currently a manual process
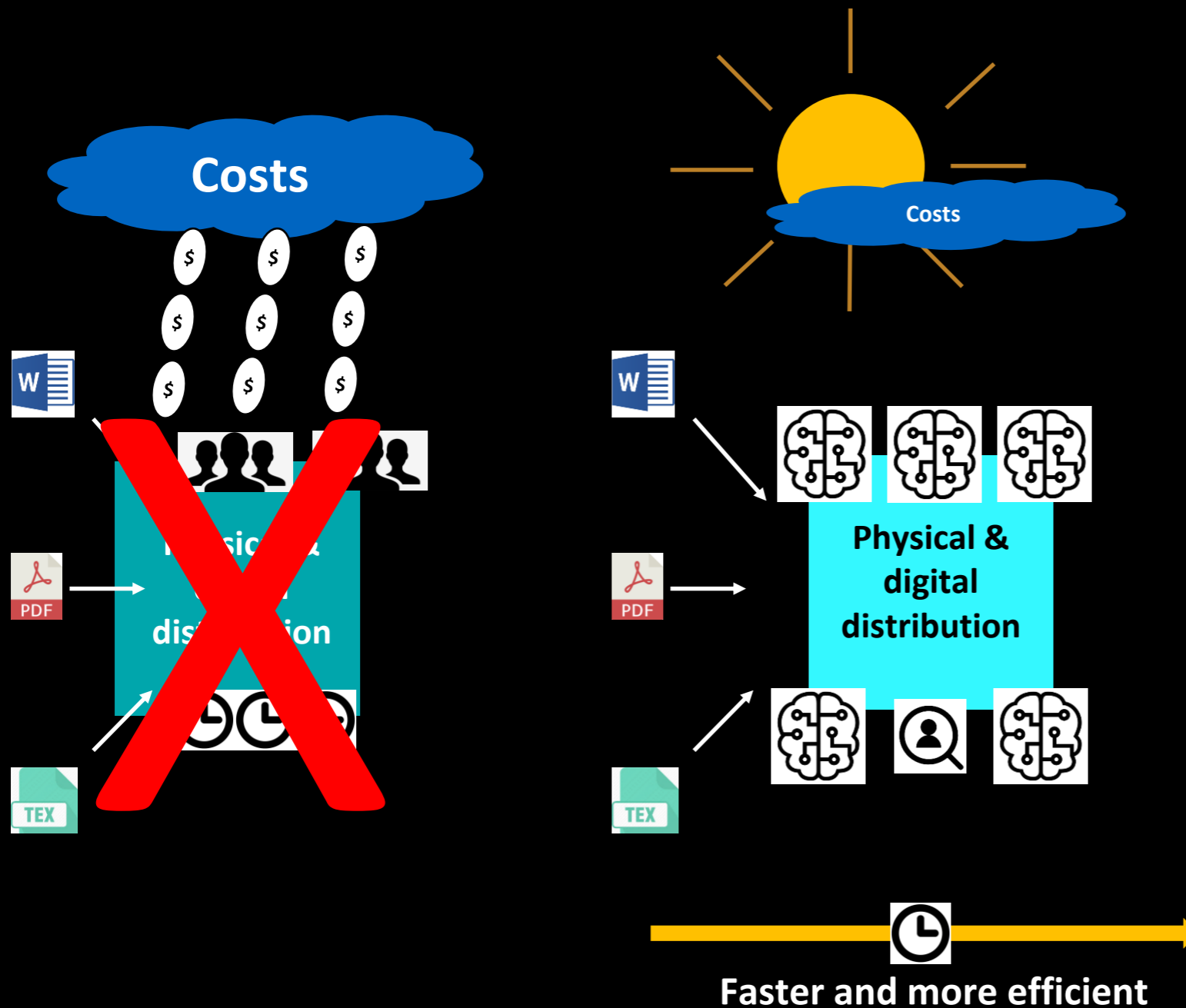
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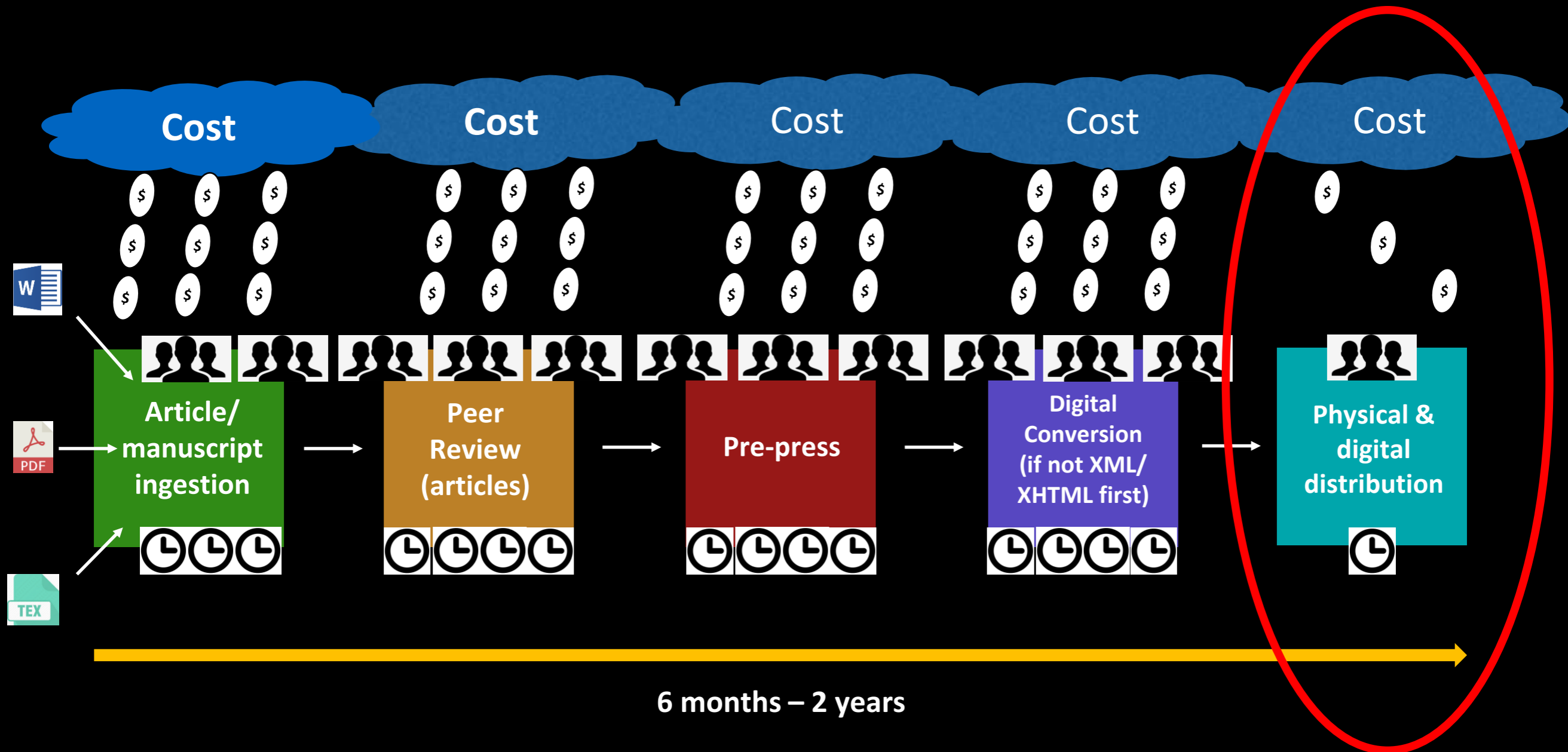
- Quickly moving towards automatic processes which distribute content into many channels simultaneously in many different formats

- Physical distribution will be aided by intelligent warehousing and distribution systems

- Networked economy driving distribution decisions

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Concluding

- **Radical changes afoot in the workflow – changing business models and emphasis on data all driven by the networked economy**

- **Need to increase the speed to market of academic content – open or other**

- **AI as the enabler – specific tools to remove tasks currently carried out by manual intervention saving cost / time, and ensuring future success of scientific publishing**

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Thank you

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