

Auditing 2.0: Using Process Mining to Support Tomorrow's Auditor



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Auditors can use process mining techniques to evaluate all events in a business process, and do so while it is still running.

Auditors validate information about organizations and their business processes. Reliable information is needed to determine whether these processes are executed within certain boundaries set by managers, governments, and other stakeholders. Violations of specific rules enforced by law or company policies may indicate fraud, malpractice, risks, or inefficiencies.

Traditionally, an audit can only provide reasonable assurance that business processes are executed within the given set of boundaries. Auditors assess the operating effectiveness of process controls, and when these controls are not in place or functioning as expected, they typically check samples of factual data.

However, with detailed information about processes increasingly available in high-quality event logs, auditors no longer have to rely on a small set of samples offline. Instead, using process mining techniques, they can evaluate all events in a business process, and do so while it is still running.

The omnipresence of electronically recorded business events

coupled with process mining technology enable a new form of auditing that will dramatically change the role of auditors: Auditing 2.0.

PROCESS MINING

The goal of process mining is to discover, monitor, and improve real (not assumed) processes by extracting knowledge from event logs. Over the past decade, process mining techniques have matured and are being integrated into commercial software products (W.M.P. van der Aalst et al., "Business Process Mining: An Industrial Application," *Information Systems*, vol. 32, no. 5, 2007, pp. 713-732).

Business provenance

Process mining starts with the event log: a sequentially recorded collection of events, each of which refers to an activity (well-defined step) and is related to a particular case (process instance). Some mining techniques use other information such as the person or resource executing or initiating the activity, the event's time stamp, or data elements recorded with the event—for example, the size of an order.

The systematic, reliable, and trustworthy recording of events, known as *business provenance*, is essential to auditing. This term acknowledges the importance of traceability by ensuring that history cannot be rewritten or obscured.

Process discovery

By analyzing frequent patterns, process mining techniques can extract from event logs models that describe the processes at hand. For example, the Alpha process mining algorithm can automatically extract a Petri net that concisely models behavior in the event log. This gives the auditor an unbiased view of what has actually happened.

Conformance checking

An auditor can use an a priori process model to check if reality, as recorded in the event log, conforms to the model and vice versa. For example, a model may indicate that purchase orders exceeding one million euros require two checks. Auditors can use conformance checking to detect deviations, locate and explain them, and measure their severity (A. Rozinat and W.M.P. van

Auditing 2 Process Mining

Frank Leymann, Dieter Roller

A red circular graphic with a gradient, appearing as a stylized arrow or a partial circle, located to the right of the authors' names.

Auditing 2 Process Mining:

Evaluation of Novel Approaches to Software Engineering Ernesto Damiani, George Spanoudakis, Leszek A.

Maciaszek, 2019-06-29 This book constitutes the refereed proceedings of the 13th International Conference on Evaluation of Novel Approaches to Software Engineering ENASE 2018 held in Funchal Madeira Portugal in March 2018 The 17 revised full papers and 5 revised short papers presented were carefully reviewed and selected from 95 submissions The papers are organized in topical sections on service science and business information systems and software engineering *Advanced*

Digital Auditing Egon Berghout, Rob Fijneman, Lennard Hendriks, Mona de Boer, Bert-Jan Butijn, 2022-10-29 This open access book discusses the most modern approach to auditing complex digital systems and technologies It combines proven auditing approaches advanced programming techniques and complex application areas and covers the latest findings on theory and practice in this rapidly developing field Especially for those who want to learn more about novel approaches to testing complex information systems and related technologies such as blockchain and self learning systems the book will be a valuable resource It is aimed at students and practitioners who are interested in contemporary technology and managerial implications

From Software Engineering to Formal Methods and Tools, and Back Maurice H. ter Beek, Alessandro Fantechi, Laura Semini, 2019-10-08 This volume was published in honor of Stefania Gnesi's 65th birthday The Festschrift volume contains 32 papers written by close collaborators and friends of Stefania and was presented to her on October 8 2019 one day colloquium held in Porto Portugal The Festschrift consists of eight sections seven of which reflect the main research areas to which Stefania has contributed Following a survey of Stefania's legacy in research and a homage by her thesis supervisor these seven sections are ordered according to Stefania's life cycle in research from software engineering to formal methods and tools and back Software Engineering Formal Methods and Tools Requirements Engineering Natural Language Processing Software Product Lines Formal Verification and Applications **Business Intelligence** Esteban

Zimányi, 2014-03-20 To large organizations business intelligence BI promises the capability of collecting and analyzing internal and external data to generate knowledge and value thus providing decision support at the strategic tactical and operational levels BI is now impacted by the Big Data phenomena and the evolution of society and users In particular BI applications must cope with additional heterogeneous often Web based sources e.g. from social networks blogs competitors suppliers or distributors data governmental or NGO based analysis and papers or from research publications In addition they must be able to provide their results also on mobile devices taking into account location based or time based environmental data The lectures held at the Third European Business Intelligence Summer School eBISS which are presented here in an extended and refined format cover not only established BI and BPM technologies but extend into innovative aspects that are important in this new environment and for novel applications e.g. pattern and process mining business semantics Linked Open Data and large scale data management and analysis Combining papers by leading researchers in the field this volume

equips the reader with the state of the art background necessary for creating the future of BI It also provides the reader with an excellent basis and many pointers for further research in this growing field *Continuous Auditing* Mohammad Javad Abdolmohammadi,Ahmad Sharbatouglie,2005 Report of Audit and Investigation ... and Memorandum in Re Nevada Industrial Insurance Act Nevada Industrial Commission,1916 The Mining Magazine ,1918 Auditing Principles Robert Hiester Montgomery,Walter Adolph Staub,1923 The Student's Auditing Harry E. Evans,1914 **Application and Theory of Petri Nets** ,2005 **On the Move to Meaningful Internet Systems ...: CoopIS, DOA, and ODBASE** ,2004 Auditing Theory and Practice: General principles Robert Hiester Montgomery,1922 Proceedings of the 31st Forum on the Geology of Industrial Minerals George S. Austin,1996 **Wisconsin Statutes** Wisconsin,1913 **Proceedings of the Parliament of South Australia** South Australia. Parliament,1890 **Auditing Theory and Practice** Robert Hiester Montgomery,1922 The Dominions Office and Colonial Office List Comprising Historical and Statistical Information Respecting the Overseas Dominions and Colonial Dependencies of Great Britain. Brit ,1880 □□□□ ,1995 *The Colonial Office List* Great Britain. Colonial Office,1877 **Production Workflow** Frank Leymann,Dieter Roller,2000 Suicide cannot be read as simply another novel it is in a sense the author s own oblique public suicide note a unique meditation on this most extreme of refusals Presenting itself as an investigation into the suicide of a close friend perhaps real perhaps fictional more than twenty years earlier Lev gives us little by little a striking portrait of a man with all his talents and flaws who chose to reject his life and all the people who loved him in favor of oblivion Gradually through Lev s casually obsessive pointillist beautiful ruminations we come to know a stoic sensible thoughtful man who bears more than a slight psychological resemblance to Lev himself But Suicide is more than just a compendium of memories of an old friend it is a near exhaustive catalog of the ramifications and effects of the act of suicide and a unique and melancholy farewell to life

Auditing 2 Process Mining: Bestsellers in 2023 The year 2023 has witnessed a remarkable surge in literary brilliance, with numerous engrossing novels captivating the hearts of readers worldwide. Lets delve into the realm of bestselling books, exploring the fascinating narratives that have captivated audiences this year. The Must-Read : Colleen Hoover's "It Ends with Us" This touching tale of love, loss, and resilience has captivated readers with its raw and emotional exploration of domestic abuse. Hoover masterfully weaves a story of hope and healing, reminding us that even in the darkest of times, the human spirit can succeed. Uncover the Best : Taylor Jenkins Reids "The Seven Husbands of Evelyn Hugo" This spellbinding historical fiction novel unravels the life of Evelyn Hugo, a Hollywood icon who defies expectations and societal norms to pursue her dreams. Reids absorbing storytelling and compelling characters transport readers to a bygone era, immersing them in a world of glamour, ambition, and self-discovery. Auditing 2 Process Mining : Delia Owens "Where the Crawdads Sing" This captivating coming-of-age story follows Kya Clark, a young woman who grows up alone in the marshes of North Carolina. Owens crafts a tale of resilience, survival, and the transformative power of nature, captivating readers with its evocative prose and mesmerizing setting. These popular novels represent just a fraction of the literary treasures that have emerged in 2023. Whether you seek tales of romance, adventure, or personal growth, the world of literature offers an abundance of captivating stories waiting to be discovered. The novel begins with Richard Papen, a bright but troubled young man, arriving at Hampden College. Richard is immediately drawn to the group of students who call themselves the Classics Club. The club is led by Henry Winter, a brilliant and charismatic young man. Henry is obsessed with Greek mythology and philosophy, and he quickly draws Richard into his world. The other members of the Classics Club are equally as fascinating. Bunny Corcoran is a wealthy and spoiled young man who is always looking for a good time. Charles Tavis is a quiet and reserved young man who is deeply in love with Henry. Camilla Macaulay is a beautiful and intelligent young woman who is drawn to the power and danger of the Classics Club. The students are all deeply in love with Morrow, and they are willing to do anything to please him. Morrow is a complex and mysterious figure, and he seems to be manipulating the students for his own purposes. As the students become more involved with Morrow, they begin to commit increasingly dangerous acts. The Secret History is a masterful and suspenseful novel that will keep you speculating until the very end. The novel is a cautionary tale about the dangers of obsession and the power of evil.

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Auditing 2 Process Mining Introduction

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