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free-of-charge call
about your development workflows
& potential transfer pricing issues

Data Analytics

for transfer pricing in software companies

Modern software development is now more integrated, collaborative, and fine-grained than ever before.

This creates a headache for transfer pricing managers. It is now much more difficult to understand global software development workflows, adhere to the Arm's Length Principle, and ensure tax compliance.

This document summarizes how we at Kolabri employ data analytics to analyze and understand your firm's global software development workflows – and help you design, implement, and automate transfer pricing strategies accordingly.

Our Approach

Collaborative software development at a global scale is inherently messy: There might be use relationships between hundreds of software components within your firm. Developers from dozens of national entities might perform tens of thousands small code contributions to software owned by other national entities¹. Often, this happens self-organized without governance or formal procedures.

At Kolabri, we unravel the complexity of modern software engineering processes for your tax compliance by analyzing data that is readily available in your software development infrastructure. We proceed as follows:

1. **Extraction.** We automatically extract data about your software development collaboration from your existing development infrastructure - that is tools and systems software developers and engineering managers at your company use for their daily work.
2. **Analysis & Interpretation.** We statistically analyze and aggregate the data and make patterns visible. We interpret the data using our extensive experience in software development processes and transfer pricing.
3. **Action.** Depending on your needs, we take action: This could mean we document our findings for your transfer pricing managers to take the helm or we jointly develop a new strategy, implement it with you, or automate transfer pricing calculation for you.

When analyzing your global software development workflows, we investigate three different dimensions:

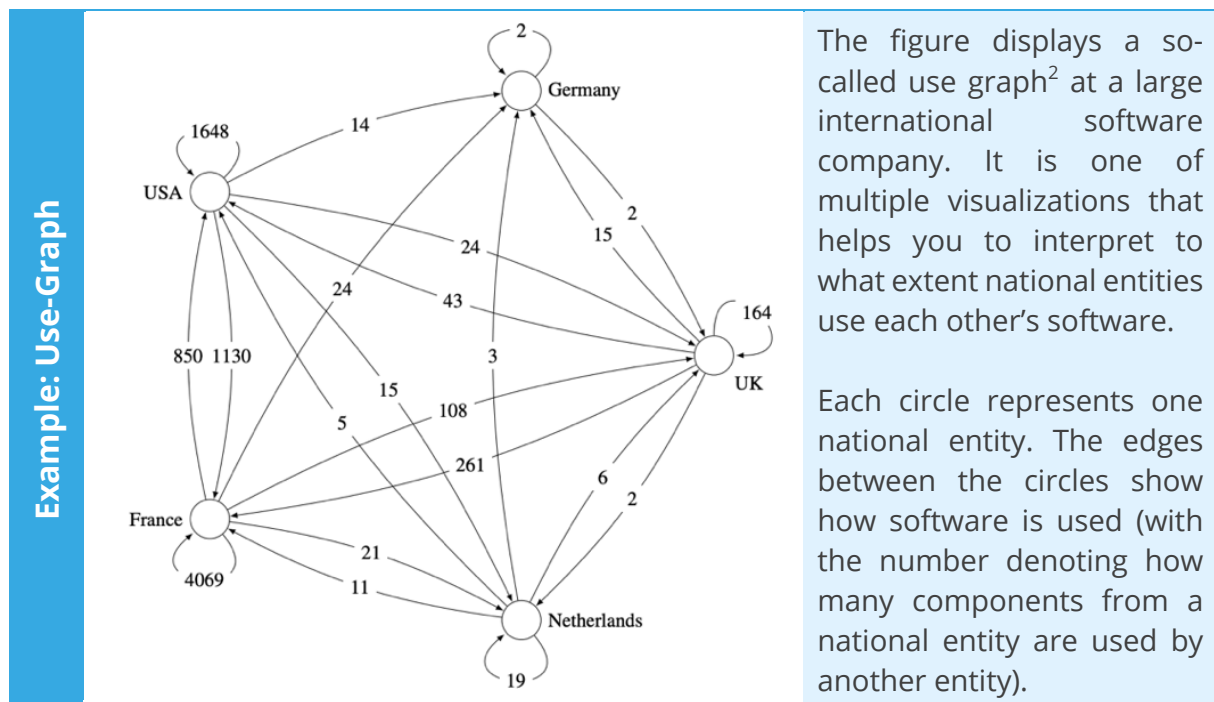
Use relationships Which national entities use software from other entities or provide software to other entities?	Collaboration To what extent do national entities contribute to one another's software by performing changes?	Communication How do developers communicate among national entity boundaries? How does information flow?
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The next pages summarize typical analyses we perform along each of these dimensions and their relationship to your transfer pricing strategy.

¹ Michael Dorner et al. "Taxing Collaborative Software Engineering". IEEE Software (2023). See <https://www.computer.org/csdl/magazine/so/5555/01/10374093/1TaCXGcl2i4>

Understanding Use relationships

National entities typically provide software to and use software from one another. Often, transfer pricing managers do not have an overview of such use relationships and the economic transactions around them: Which national entities provide which software components? Which entities use them and to what extent?



When extracting, analyzing, and interpreting data about use relationships, the results include:

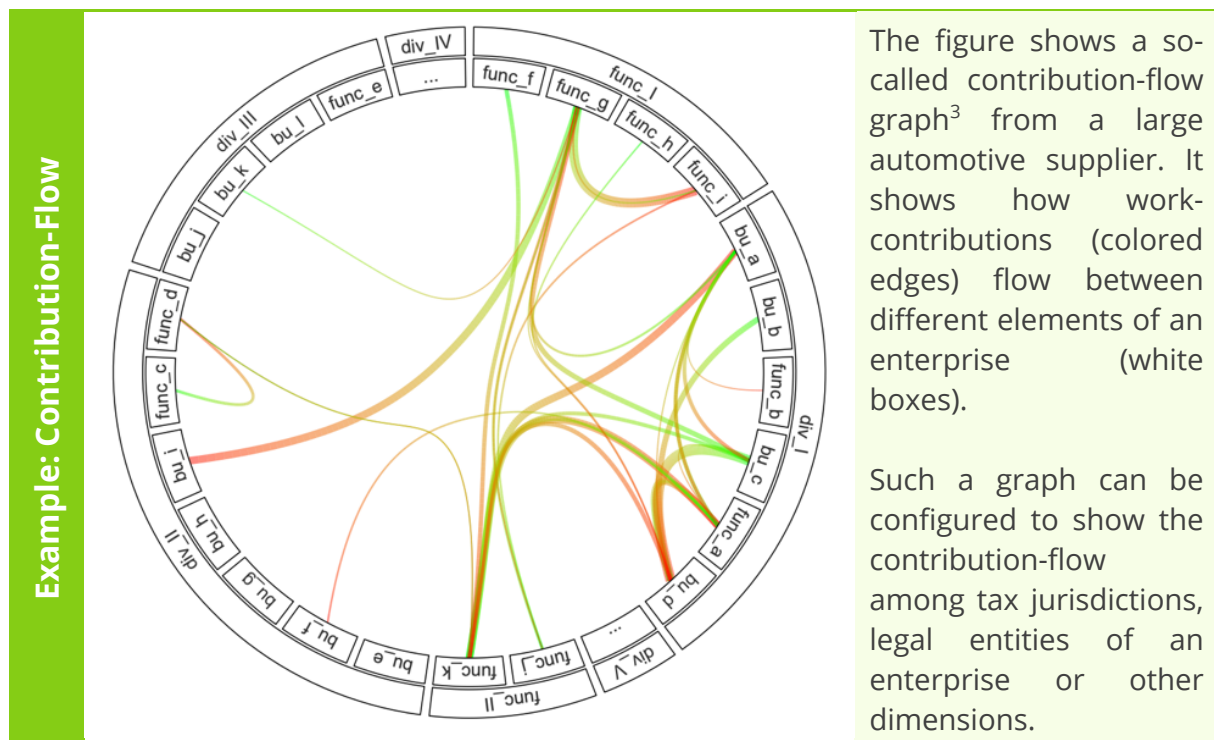
1. **Analysis & interpretation of use patterns.** An analysis of patterns in the use relationships tells you who uses and who provides software and whether there are clusters of use relationships. We use different statistical methods and visualizations (the use graph above being one of them).
2. **Complete list of use relationships.** A complete list of all use relationships ensures you have the full picture of use-related transactions.
3. **Attributes of use relationships.** Further attributes describe the use relationships and can be used as one input for transfer price calculation (i.e., is it a long-standing relationship or a one-off).

The precision and effort for such an analysis depends on your existing software development infrastructure. We help you identify whether your infrastructure already tracks this information or - if not - how to extend or improve it.

² Michael Dorner et al. "Describing Globally Distributed Software Architectures for Tax Compliance." arXiv preprint arXiv:2312.00925 (2023). See <https://arxiv.org/abs/2312.00925>

Understanding Collaboration

Software developers in different national entities typically contribute to the software of other national entities. Which entities contribute to whose software? Are there indicators for typical collaboration patterns like the formation of a community or internal contractors?



Like we do for use relationships, when analyzing the contribution-flow, we compile a complete list of transactions including additional attributes describing the transactions and interpret and aggregate the data to look for patterns.

We extract the required data using the so-called contribution-flow method and our extraction tools. The process for extracting such data is well-tested and possible at most companies: We performed contribution-flow analyses at multiple companies including three DAX40 companies (Germany's largest companies).

³ Maximilian Capraro et al. "The patch-flow method for measuring inner source collaboration." Proceedings of the 15th International Conference on Mining Software Repositories. 2018. See <https://ieeexplore.ieee.org/abstract/document/8595235>

Understanding Communication

Typical communication tasks of software developers leave traces: Much of it happens asynchronously in discussions on firm-internal development platforms. Bespoke analyses of communication patterns can augment the analyses of collaboration and use relationships. Which communication analysis makes sense depends on your enterprise and the existing development infrastructure.

Benefits

Analyzing **use relationships** and software development **collaboration** can support your transfer pricing strategy in multiple ways:

1. **Identify functional and risk profiles.** Use relationship and collaboration patterns help you understand who plays what role in your company's software development. They are a key input to identifying the functional and risk profile of legal entities and designing your transfer pricing strategy.
2. **Transfer price calculation.** Our data extraction yields a complete list of software development-related transactions with additional attributes describing these transactions. Such an analysis is a key input to automatically calculating the actual transfer prices.
3. **Risk-mitigation.** A complete, up-to-date, verifiable list of transactions makes sure that you have a full picture and do not experience any surprises during an audit.
4. **Documentation.** The extracted data and the provided aggregations can become a part of your transfer pricing documentation and help you to detail transactions and prices paid.
5. **Justification & substantiation of decisions.** The patterns we identify allow you to justify and substantiate your decision for specific transfer pricing methods or calculations.

Understanding the software development **communication** can indirectly support you in realizing the benefits mentioned above. In addition, understanding your development communication allows you to:

6. **Prediction of collaboration & use.** Where collaboration or use relationships are about to emerge, an analysis of your software development collaboration allows you to predict where this will happen and who will play what role.

A Typical Project with Kolabri

A typical project with Kolabri can look as follows:

1. **Fact-finding** (*approx. 2 - 3 weeks*): We will listen to your individual approach to collaborative software development. We need to understand the commercial background of your company and how many legal entities you suspect are participating in the software development. The commercial fact-finding will include a review of existing intercompany agreements and transfer pricing documentation (if available). The fact-finding will also include a “technical inventory”; e.g., we will work to understand the technical parameters of your software development and data management. The fact-finding will typically involve two conference calls and conclude by a joint workshop, during which we define a detailed project plan and milestones. Specifically, it will be determined which of the three dimensions (use relationships, collaboration, communication) need to be analyzed.
2. **Analysis**: We establish technical interfaces to ensure a secure and efficient extraction of data regarding your software development workflows (*approx. 4 weeks*, depending on available data). Utilizing our proprietary software, we will analyze your data and compile a preliminary report outlining our interpretation of the data (*approx. 2 weeks*). The preliminary report will be discussed to validate our interpretation and - if deemed required - extend the scope of the analysis. Extending the scope might include analyzing an additional dimension of software development or amending applied parameters (e.g., ownership definitions and thresholds). The analysis will be concluded by a final report providing a technical visualization of your software collaboration as well as a risk assessment on transfer pricing issues (*approx. 2 weeks*).
3. **Action**: Based on the final report, we will agree on and implement a joint action plan. Depending on the findings, actions may include drafting a transfer pricing documentation to substantiate the compliance with the Arm’s Length principle or the optimization of existing transfer pricing setups. Based on our solutions, you can automate cost-plus base setup and cost contribution arrangements (as well as hybrid systems). We will also help to set up monitoring and adjustment procedures to ensure that your transfer pricing setup for collaborative software development remains viable and does not strain resources for administrative purposes.

Kolabri prides itself on communicating timely and proactively throughout the project. You will always be informed of the status of your project.

Contact

Reach out to us anytime!

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