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Facilitating ethical decisions throughout the data supply chain
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Organizations need processes for discovering and mitigating the risks that arise from inadequate data ethics. With data being incorporated and acted upon throughout project lifecycles, these processes are becoming increasingly necessary. The failure to recognize and address the risks of misusing or misinterpreting data can have serious consequences. In particular, it makes it harder—if not impossible—to correct accumulated risk in the future. And if these risks are left unchecked, a product's or service's use of data has the potential to degrade or even destroy a consumer's trust in a brand.

Adapting existing frameworks to address new data challenges

An organization that does not acknowledge the dangers or ethical implications of their data use will only exacerbate its risk exposure. Understandably, with such risk now a concern at nearly every step of a project lifecycle, addressing it may seem like a daunting proposition. But in reality, most organizations are already equipped with the project management frameworks they need to enable a valuable mitigation tool. Using ethical impact audits—sets of questions for each stage of a project lifecycle—can help organizations recognize and assess new forms of risk and strengthen consumer trust.

Existing project management techniques can be extended to include discussions about data ethics at every stage of a project's lifecycle. The Project Management Body of Knowledge's (PMBOK) process groups are ways of organizing project tasks by inputs and outputs.[1] Similar to the concept of PMBOK process management groups, the IT Infrastructure Library's (ITIL) service lifecycle captures five distinct phases of service delivery.[2] Ongoing ethics evaluations that can mitigate harm to consumers (and risk to the business) align well with these standard frameworks, because they are designed to uncover and address risk that could impact future project stages.[3,4]

Broadening the conversation on data use

Consumer expectations also play a role when businesses rely on third-party data to drive personalized experiences. While these ambiguities increase consumer churn risk, they also represent opportunities to provide better offerings by including diverse stakeholders in conversations about data use.

For example, Carolinas HealthCare System (CHS), a regional healthcare provider in the United States, uses third-party consumer spending data to compute personalized risk scores for their patients.[5,6] These risk scores have caused CHS to alter their care of more than 150,000 patients.[7] How might patients view outside data brought into the exam room? This question and others like it are critical to consider when information flows are altered.

The potential harm that could arise from using personalized risk scores is highlighted by their application in the US justice system. During sentencing, bond court, and probation hearings, justices are given scores that indicate the likelihood of recidivism. These scores were the subject of an in-depth investigation by ProPublica.[8] Based on the risk scores assigned to over 7,000 people arrested in a single Florida county in 2013 and 2014, ProPublica found that the algorithm used was little more reliable than tossing a coin in its ability to accurately identify re-offenders. Equally as worrying, it was particularly likely to falsely identify black defendants as future criminals —inaccurately flagging them as likely re-offenders almost twice as often as it wrongly identified white defendants as likely reoffenders.

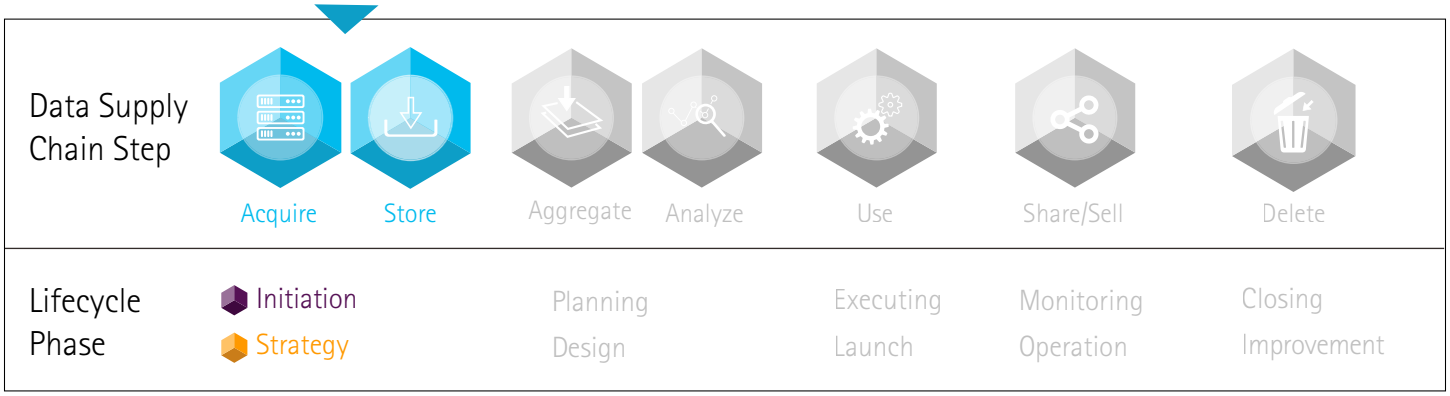
Assessing the ethical implications of data use is also important when there is a shift in context. In thinking about its role as an IoT toy company, Vai Kai has given serious consideration to the potential harm that its products could cause to its users. Doing this has enabled it to realize benefits that are similar to those it could have gained by incorporating ethical impact assessments into its product design process. Vai Kai put out a list of principles that reflected its design goals, highlighting those that addressed potential risks from collecting data on minors.[9,10] Goals like, "do not require any data to play" or "design our data usage policy so even a six-year-old can understand it", helped Vai Kai stay on track to deliver products that would uphold the highest standards of privacy for its users. Other principles such as "if our customers agree to provide anonymous usage data, it has to produce clear value to them," reflect the company's exploration of its relationship with its users and the kinds of ethical expectations that surround the use of data from a children's toy.

Project managers who conduct ethical impact assessments throughout project lifecycles reduce their organization's risk exposure to new forms of data-related harm. Failing to do so now will only lead to greater risk exposure for current and future projects. Ethics assessments are worthwhile endeavors because they can occur regardless of the original source of the data, or the context where data is being used. As new forms of risk are addressed, organizations will find themselves in a stronger position to deliver ethically sound products and services. Ultimately, this strength is a business asset that will help distinguish an organization's integrity.

Identifying ethical concerns throughout the data supply chain

Introducing an ethics assessment at each stage of the data supply chain should provide a 360-degree perspective of how data is being used. The questions below can act as a starting point for project owners to dive deeper into specific ethical concerns at each stage. Discussing these questions will help teams frame their work in an ethical context. Organizations that want to create strong relationships with users and maximize brand value should begin with strong ethical controls throughout the data supply chain.

Identifying ethical concerns: key questions



1. Acquire/Store

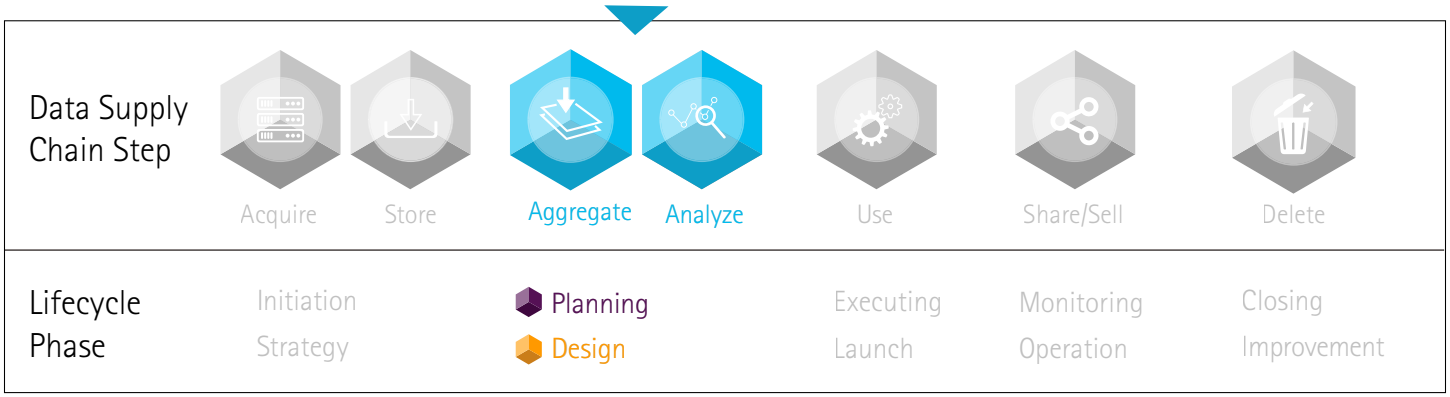
Take data in from various sources and store it in a secure and scalable way that allows for robust analytics.

Questions to address external concerns

- Are data disclosers aware that data has been acquired, stored, or shared?
- Are secondary data subjects represented in the captured data?
- Will data disclosers be able to inspect the data they have disclosed?
- Are disclosers aware of how they disclosed this data (eg directly, tracking, derived)?
- Are data disclosers able to opt-out?
- Are data disclosers able to opt-in (to collection or to specific uses)?

Questions to address internal concerns

- Have data collection or discovery methods gone through an ethics review process (similar to a code review)?
- Given the different types of data being collected, what potential harm could come from using that data?
- Is data being stored without an intended use? Is there a limit to how long data is stored without an intended use?
- What codes or principles of data ethics do data providers/disclosers follow?
- Is there a way to minimize the volume or variety of data being collected?



2. Aggregate/Analyze

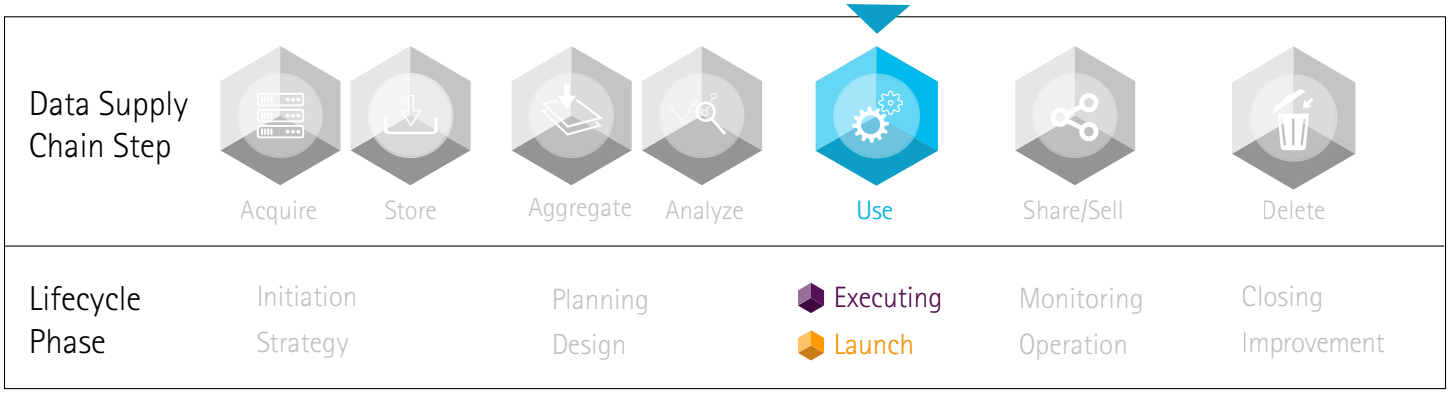
Gather various data sets and investigate connections within them that reveal new information.

Questions to address external concerns

- What are the classes of harm that a bad actor or group of actors could cause if they had access to the entire set of aggregated data sources or any related analysis?
- Would data disclosers be surprised about the breadth of data sources being aggregated? If so, are there actions that can be taken to gain informed consent (or at least inform the data subjects)?
- What negative consequences for the data discloser could result from the proposed analysis? What steps are being taken to mitigate these risks?

Questions to address internal concerns

- What would the reputational impact be on the organization if the data was misused?
- Would research methodologies receive a favorable reaction if they were widely shared?
- What biases have been introduced during manipulation? What biases might be present in the training data (when machine learning is used)? Was an ethics review performed (similar to a code review)?
- How frequently should an ethics assessment be performed on these analyses for alignment with project/product/service goals and the organization's code of ethics?



3. Use

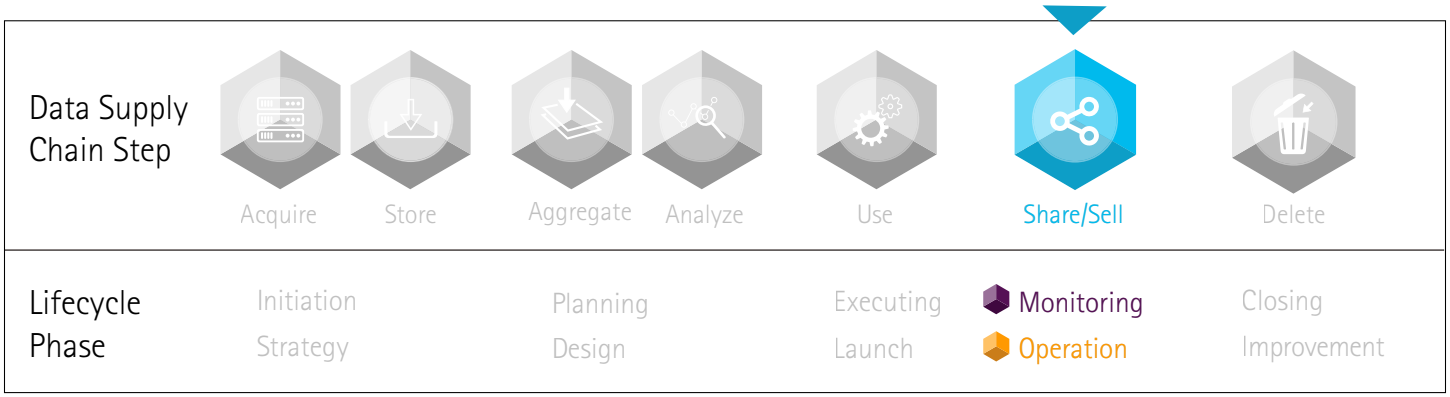
Apply analytic insights to inform the delivery of a product or service in the real world.

Questions to address external concerns

- Did the data discloser provide consent to this specific data use? Was that consent informed?
- Do any consent agreements make it clear that data could be used in this way?
- Are there mechanisms in place to alert data disclosers that their data is being used?
- Can a data discloser discover where data they have disclosed has been used and for what purpose?
- What are the methods for recourse by a data consumer who finds issues with the insights being used?

Questions to address internal concerns

- Are the uses of the data consistent with the intentions of the discloser? What are the potential risks to the organization if a watchdog group knew the data was used in this way?
- What are the regulatory controls concerning the use of this data? What actions need to be taken to ensure compliance?
- Are there mechanisms in place for controlling access to the data and logging when internal and external parties have used the data?
- What measures are taken to account for risk and/or harm that could come from misusing the data? What measures are taken to ensure the data manipulators are aware of the risks associated with misapplying or misusing the data?
- If alternative applications for the data are discovered when using the data, what steps need to be taken to approve further use and document the alternative application? What value is realized from informing data disclosers of these new uses? Does the new application bring any direct value to the data discloser? What additional risks are introduced?



4. Share/Sell

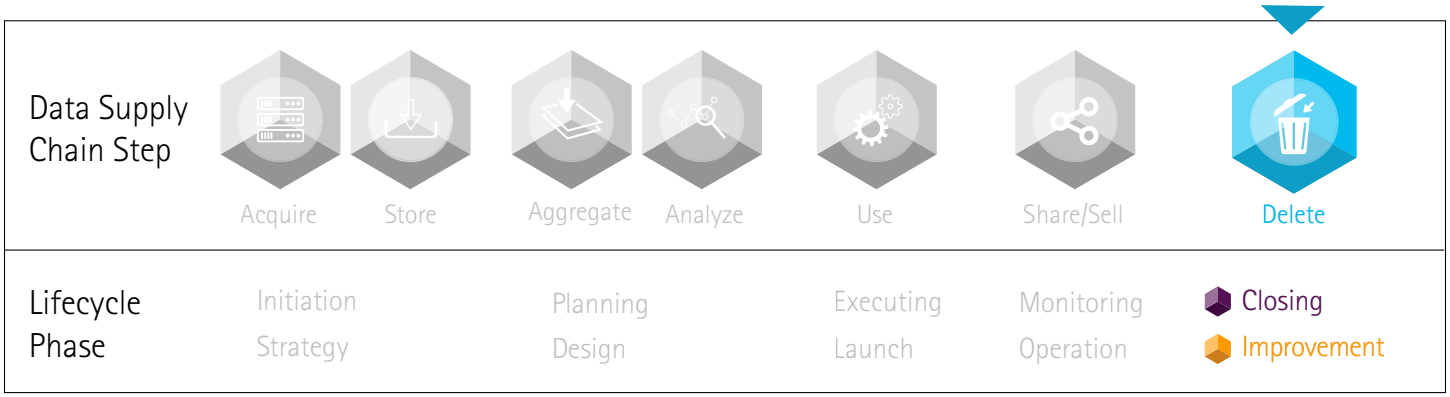
Release data to new data manipulators or data users through static data sets or APIs with the goal of generating revenue and/or enabling further innovation or information delivery.

Questions to address external concerns

- Do data disclosers expect control, ownership, remuneration, or transparency over the data they have disclosed if it is being shared or sold? Did they provide informed consent for this action?
- Is it in the data discloser's best interest to have their data shared among third parties?
- Do data disclosers have any say in whether or not their data is shared or sold?
- Are data disclosers aware their data is being shared or sold?

Questions to address internal concerns

- Does the act of sharing or selling data enhance the experience for the data discloser (not including the data seller's own ability to operate)?
- Is there another way to share or sell this data that would increase transparency?
- What parties are designated stewards of data once data is shared or sold?
- If data being shared encroaches on cultural norms around privacy or regulatory standards, should data manipulators/consumers demonstrate the value or benefit of data sharing?



5. Delete

Archive or dispose of data depending on legal obligations, commitments to the discloser, user requests, or the data's temporal value.

Questions to address external concerns

- Are stakeholders aware of the timeframe during which their data will be retained? Would they be surprised to learn it still exists?
- Are data disclosers given the ability to delete their data?
- Are data disclosers given the right to restrict future use of their data?
- Are data disclosers notified how long their data will be retained?
- Are data disclosers notified when their data is destroyed?

Questions to address internal concerns

- Should the original discloser be notified?
- Is metadata being retained? Account for the ways metadata could be used to re-identify data subjects.
- Are there any disaster recovery archives that have copies of the data?
- Is there a way to give data disclosers greater control over the retention and deletion of data they disclose (or data which is subsequently derived from these disclosures)?

Minimizing risk exposure from data: 100-day/365-day recommendations

In three months, organizations should begin to evaluate opportunities for incorporating ethics assessments into their project management paradigms.

- Evaluate current project management techniques being used by teams across your organization to identify where ethics assessments would be most useful (see previous section "Identifying ethical concerns throughout the data supply chain").
- Perform root-cause analysis for any prior ethics failures related to data use. Investigate what went wrong and interview necessary parties to understand what processes could have helped to avoid such missteps. Identify the stages and questions of a full ethics assessment that would have mitigated harm.
- Deploy ethics assessments for trial use within projects to understand their influence on the way data use concerns are addressed.
- Catalog existing products and services that use data; call out how they use data at rest and in motion.
- Experiment with hosting ethics review sessions (similar to code reviews) where specific questions are asked and scenarios are developed for how data itself or data-driven products and services could potentially harm a person or group of people.
- Develop a set of data ethics goals for your organization; pilot these goals across multiple projects to understand what is effective.

In one year, ethics assessments should be applied across your organization and effectively using them should be a core competency for employees who work with data in any capacity.

Gather examples of how ethics assessments have been leveraged to reduce potential business risk and/or customer or public harm; share findings in a report or presentation.

Continue to document how these assessments are used during product and service development. If issues arise at a later date, this documentation can help to provide justification for design choices and address matters of accountability.

Have a functioning ethics review process (similar to code reviews) for all projects that collect, manipulate, or use data.

Use the learning outcomes from ethics assessments to develop and publish a code of data ethics for your organization. Pay particular attention to any differences between data at rest and data in motion.

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Data Ethics Research Initiative

Launched by Accenture's Technology Vision team, the Data Ethics Research Initiative brings together leading thinkers and researchers from Accenture Labs and over a dozen external organizations to explore the most pertinent issues of data ethics in the digital economy. The goal of this research initiative is to outline strategic guidelines and tactical actions businesses, government agencies, and NGOs can take to adopt ethical practices throughout their data supply chains.

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