

BIM and Circular design

How to use BIM in its full potential while
empowering circular design

SBE19 Brussels - BAMB-CIRCPATH



05-07 February 2019



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 642384.



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Who are we?



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What we do?



Catharinasteeg, Aalmarkt, Leiden



Rijnboutt office, Amsterdam



Buitenveldertselaan Amsterdam



De Damiate, Haarlem



Hudson's Bay, Amsterdam



De Knoop, Utrecht

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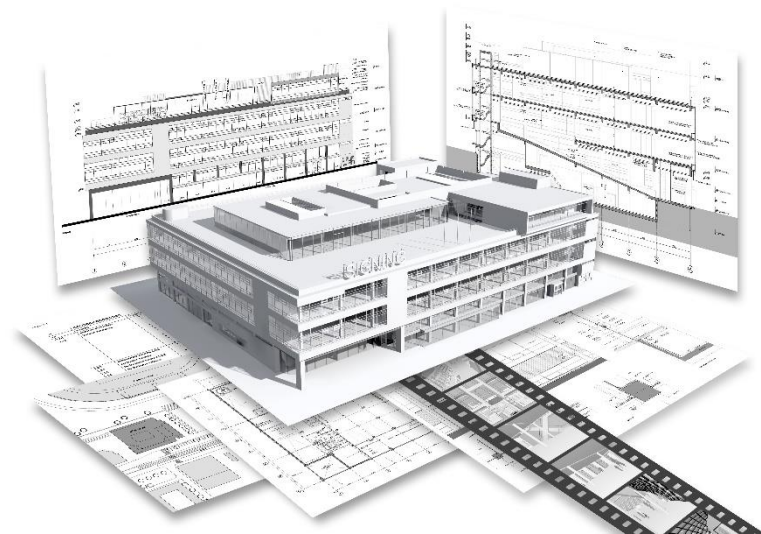
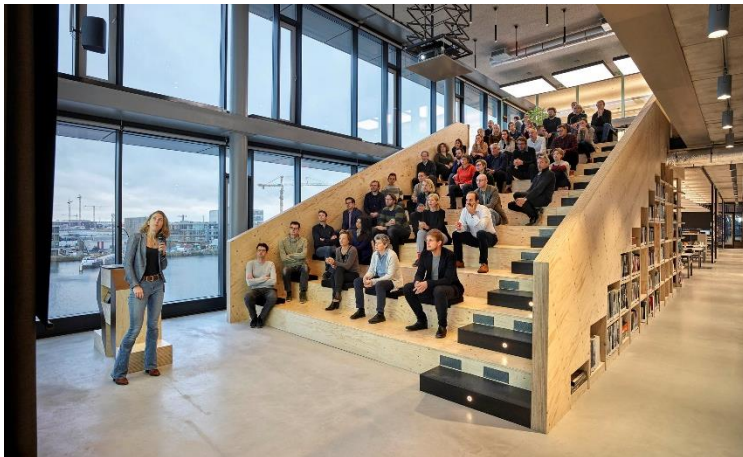


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How we work?



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Research team



Femke Kamp
circular specialist



Ana Aguiar
designer



Remco Vonk
BIM specialist



Introduction



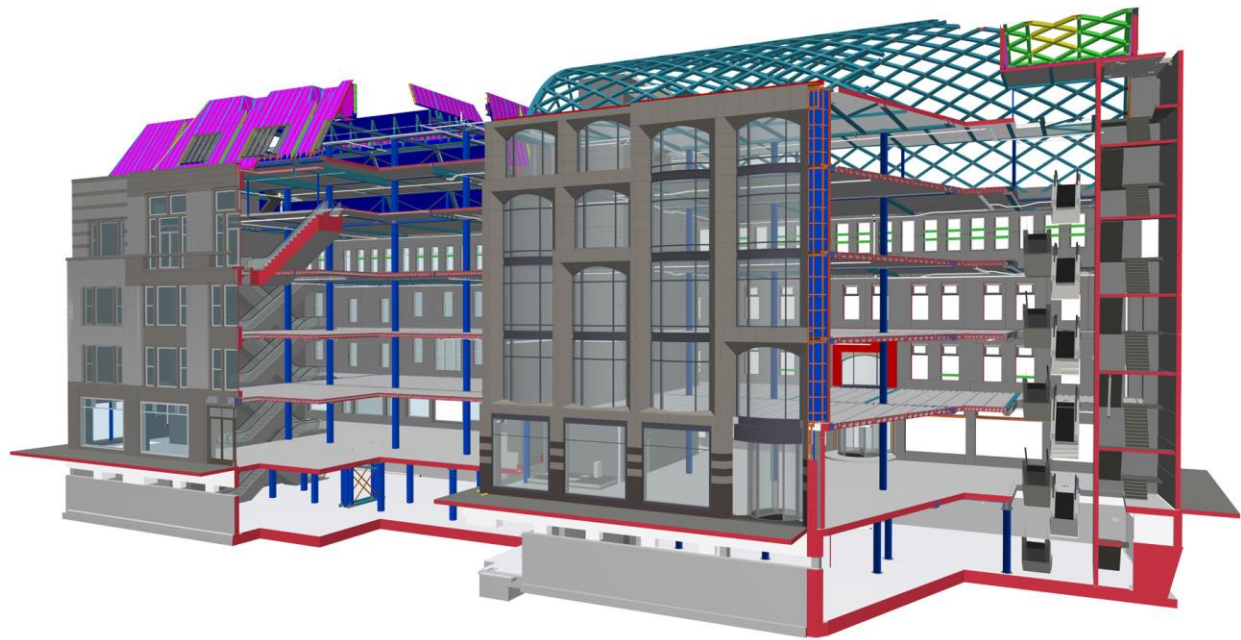
Call for action!

Motivate building owners and all other stakeholders involved to use BIM in order to change thoughts and methods within our cooperation, pointing to a circular future!



Why we do this research?

- Broad experience working with BIM
- Use BIM through all stages, from start to the end of the process
- Collaboration with Madaster in the Netherlands
- Rijnboutt Blog



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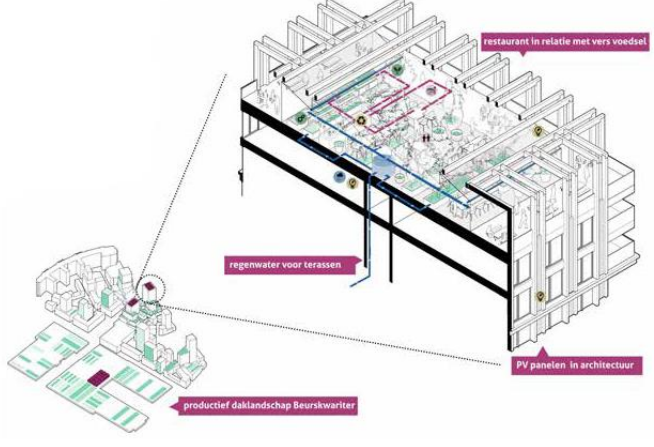
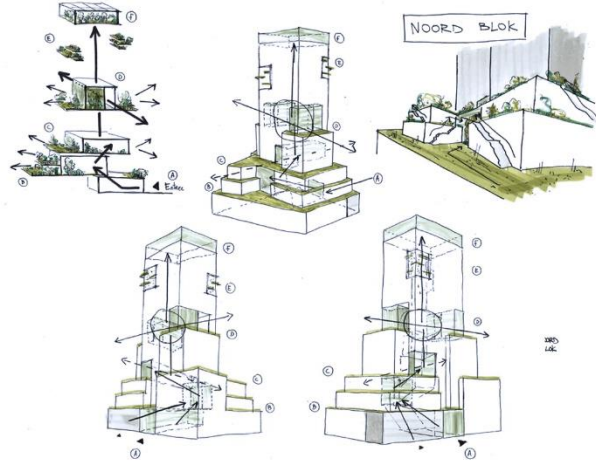
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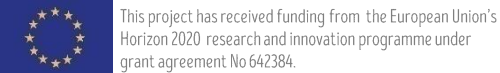
Ana Aguiar
designer



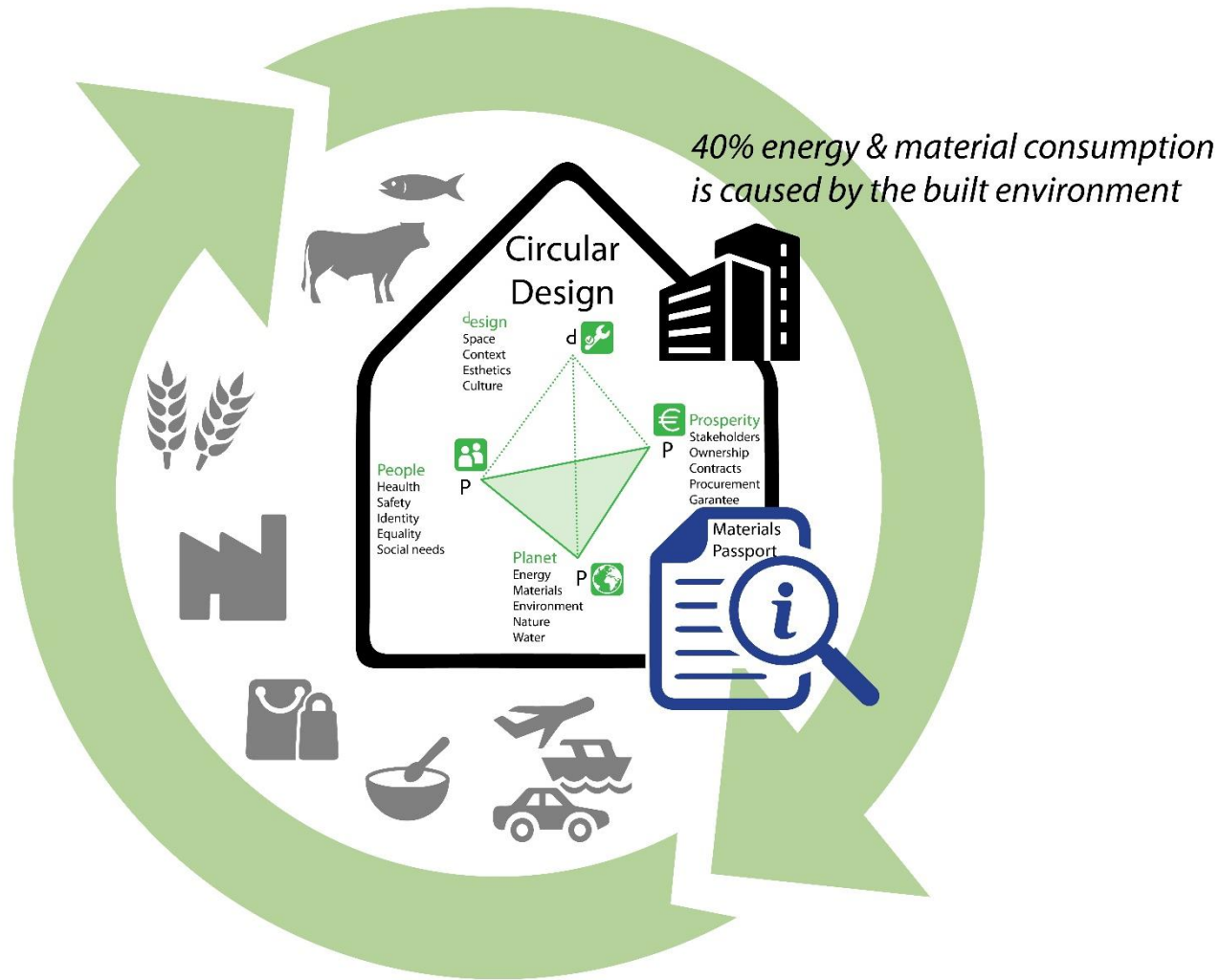
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Circular economy and Circular Design



Materials Passports

BAMB focuses on the materials passports and the kind of information it should contain.



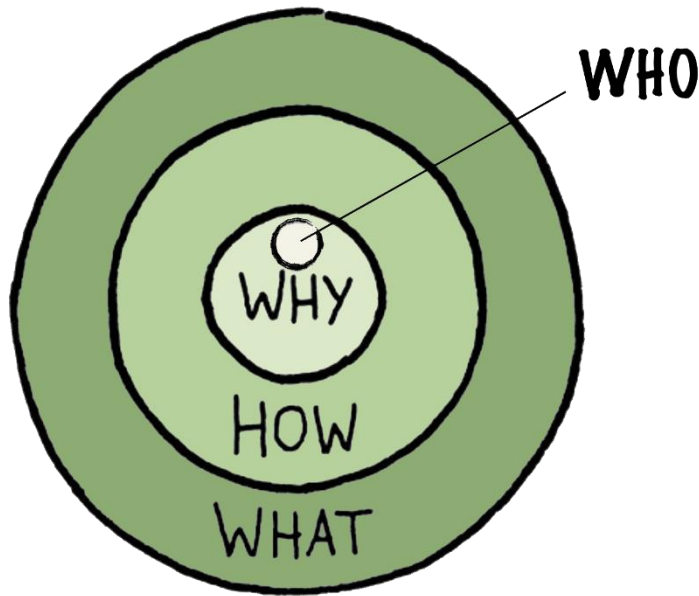
Rijnboutt is thinking about:

WHAT kind of BIM model and data is necessary.

HOW BIM can produce this content through the different phases.

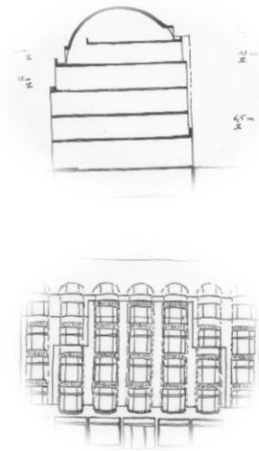
WHY we should use the information provided by BIM models.

WHO can gather and manage the information.





Remco Vonk
BIM specialist



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The power of BIM - workflow

design model



bouwkundig model intern



controle eigen model zodat evidente problemen al opgelost zijn

visueel checken - BIM validatie regelgeving Solibri Model Checker

coordination model



bouwkundig model
eventuele onderliggende:
IFC constructief en IFC installaties

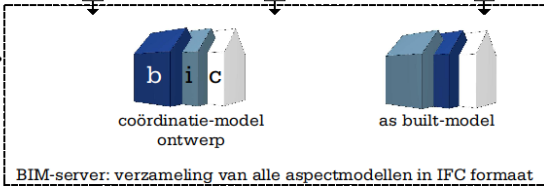


constructief model
onderliggende:
IFC bouwkundig en evt. IFC installaties

ADVISEURS



installatie model
onderliggende:
IFC bouwkundig en evt. IFC constructief



communicatie over knelpunten via solibri bestand of BIM collab

clashbespreking

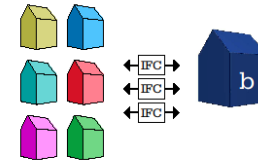
as-built model

(esthetische controle)



FABRIKANTEN

uitwisseling met fabrikanten voor as built modellen

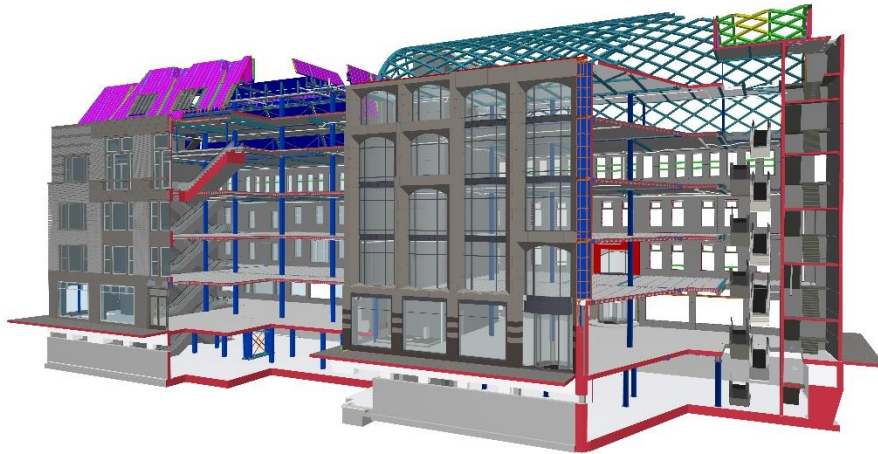


controle tekeningen
visuele controle (esthetisch, vorm)

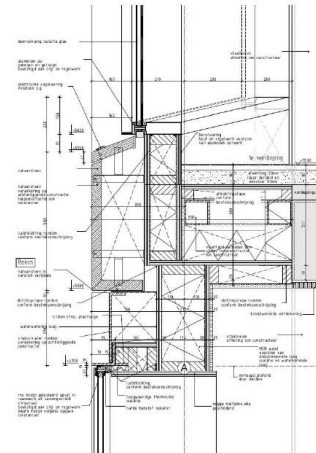
visueel clashes van de modellen van fabrikanten met het bouwkundig model in Solibri Model Checker



The power of BIM – “I” of information



- Check liability of the information
- Different stakeholders with different interests
- 80/20 rule
- Quantity is different than quality



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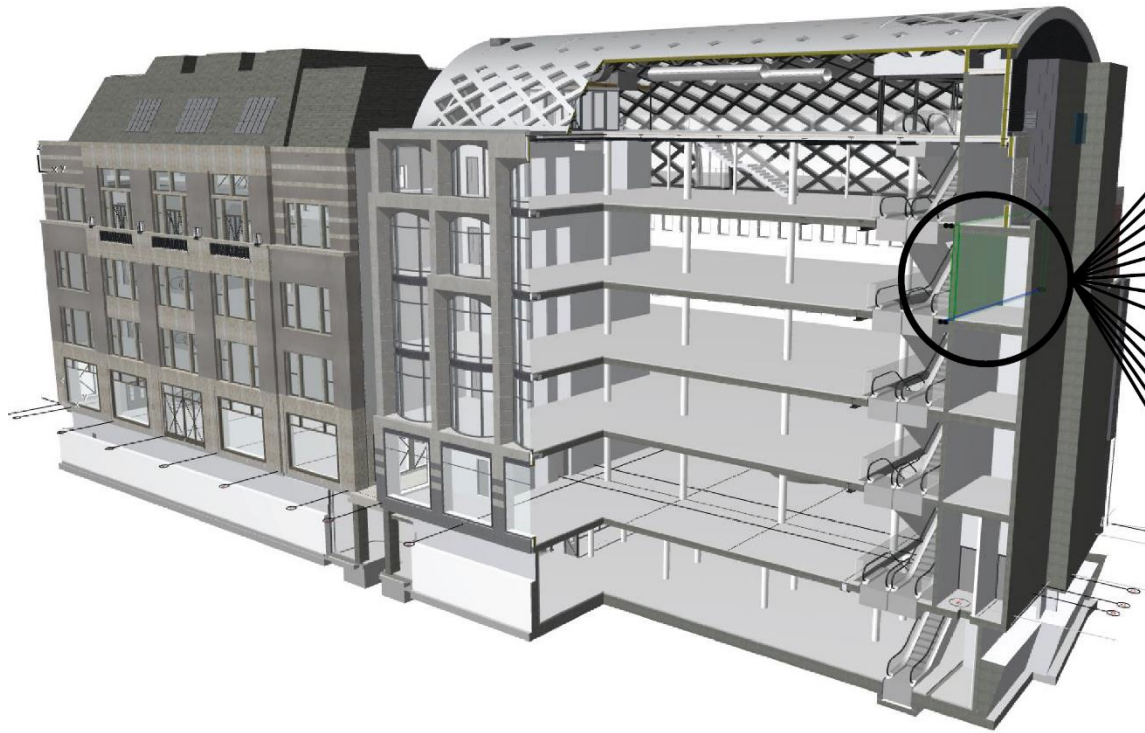


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The power of BIM – “I” of information



- Material information
- Product information
- FM information
- Cost information
- Resource information
- Procurement information
- Relationship information
- Geometric information
- Project stages
- Project type
- Tasks
- Process
- National requirements



Different BIM models

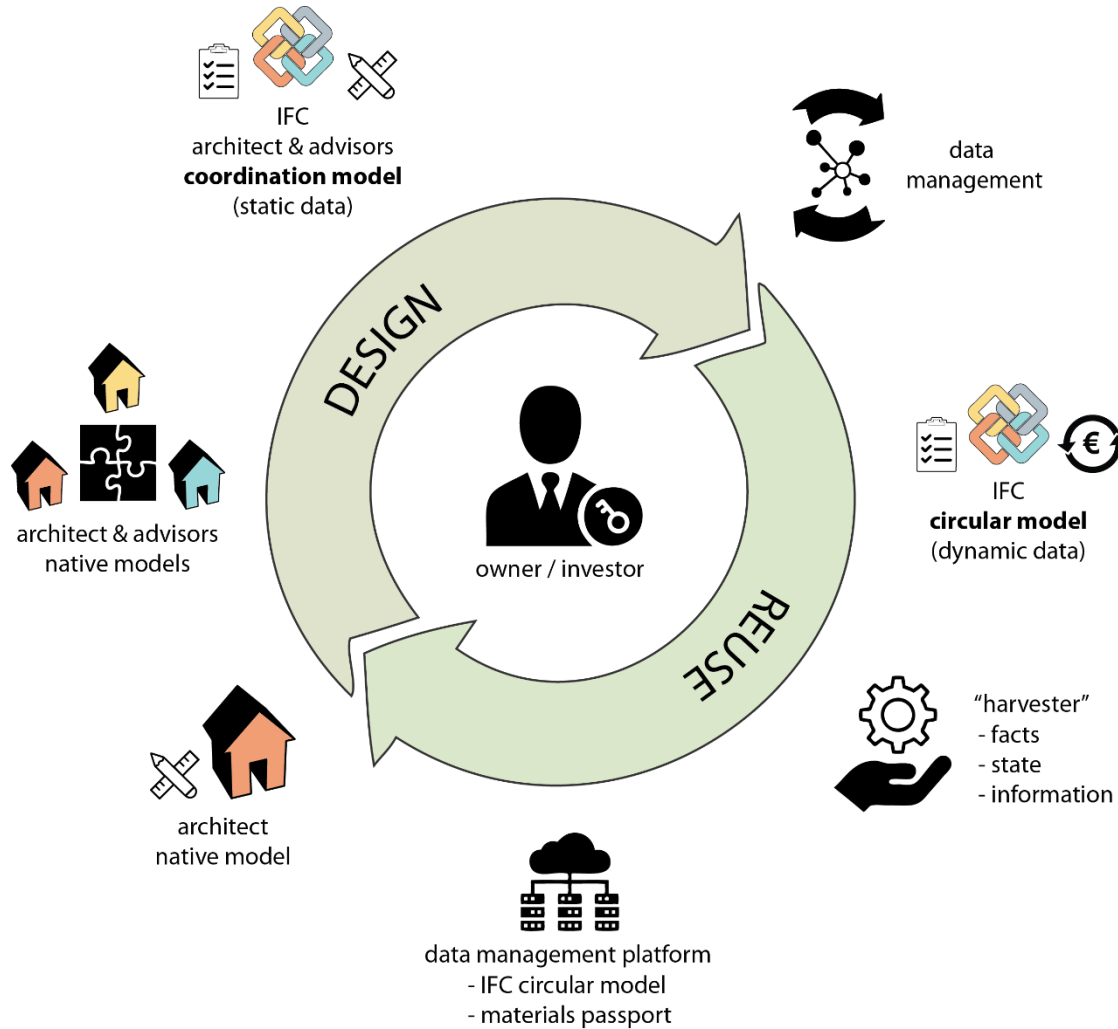


owner / investor

- The most important person to start the process.
- He's the one who have the final word when deciding to go circular.
- Architect can stimulate the owner/investor in this direction.



Different BIM models



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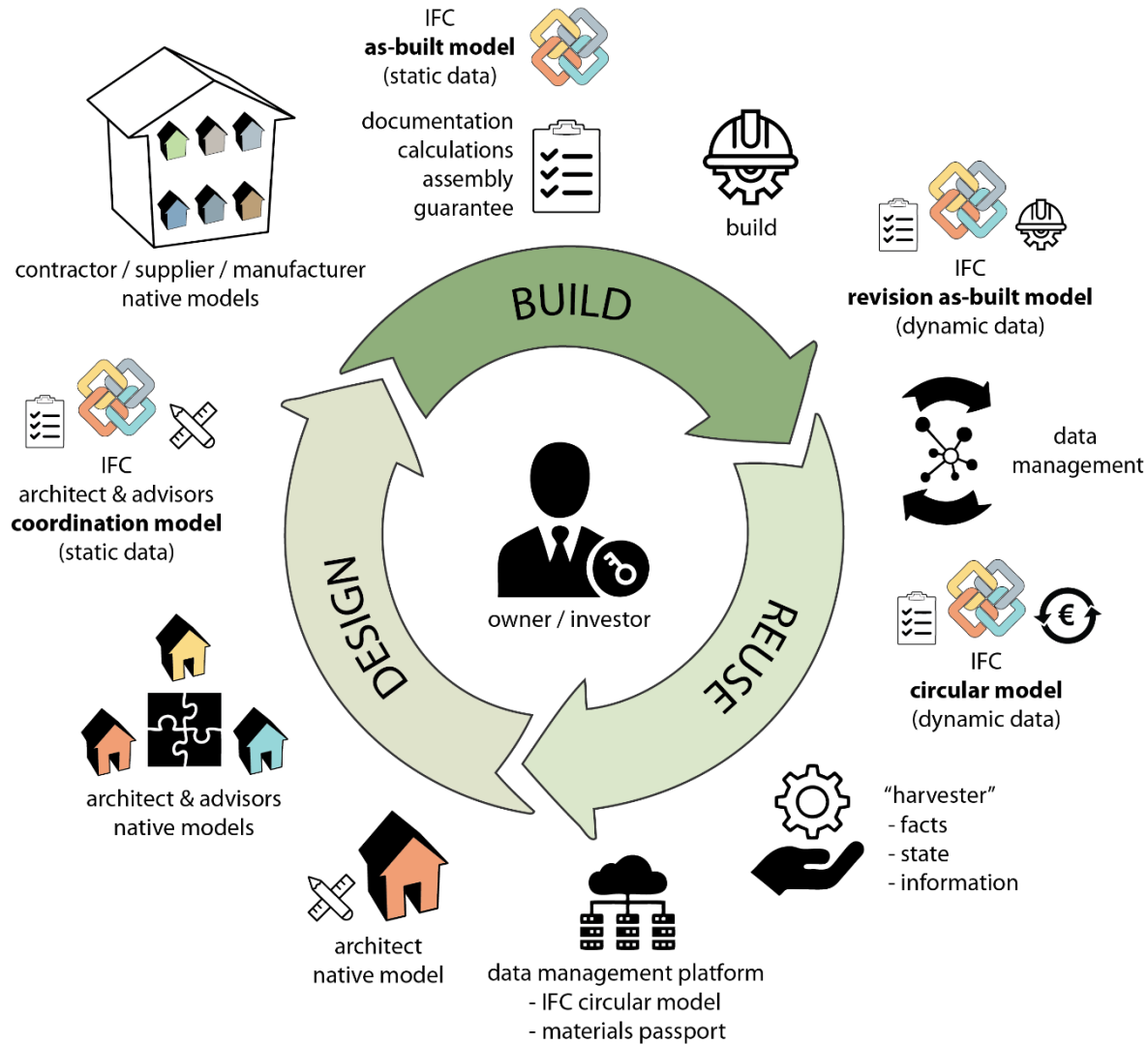


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Different BIM models



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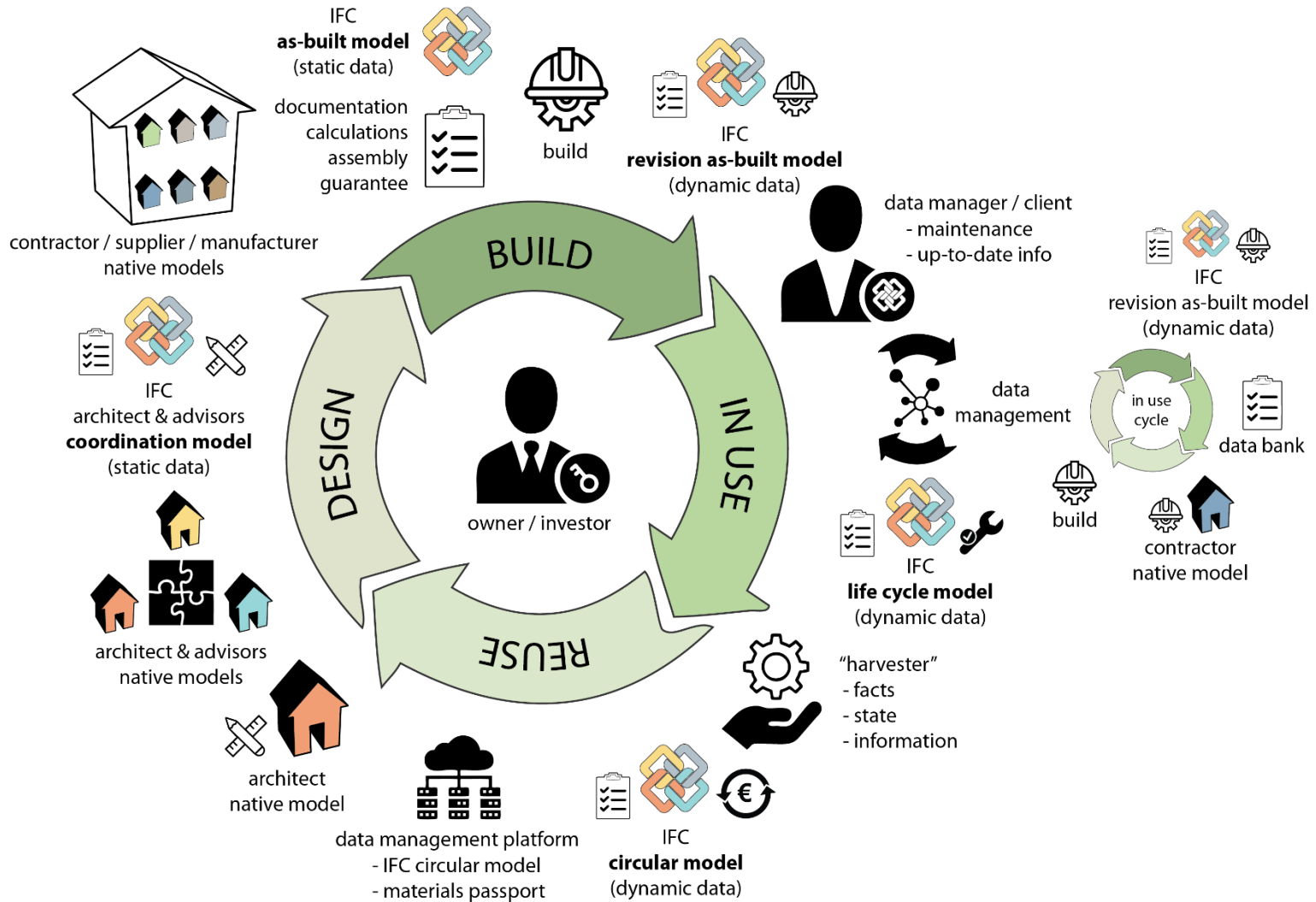


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Different BIM models



Different BIM models

Table 1. Different models to be used for the materials passport

	Information	Reliability
Coordination model 	General information	Reliable: should be revised and maintained
Revision As-built model 	Extremely detailed information	Perfect reliability, if maintained
Life cycle model 	High detailed information	Perfect reliability
Circular model 	Information according to the requirements of materials passports	Reliability should be checked by the harvester



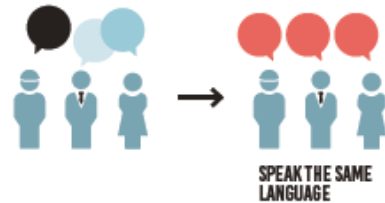


BIM

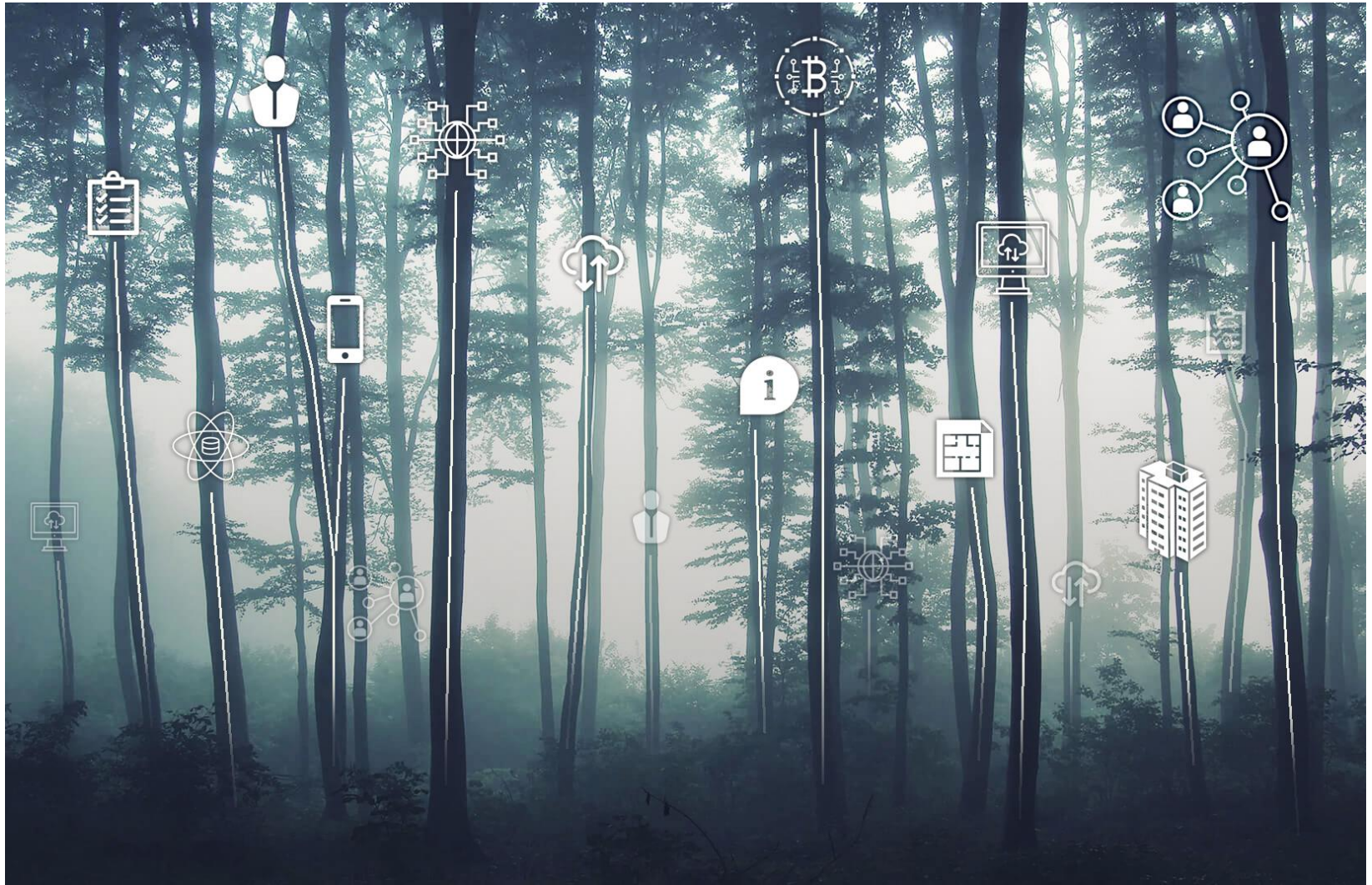
BASIC INFORMATION DELIVERY MANUAL (IDM)

1. WHY ARE WE SHARING THIS INFORMATION UNAMBIGUOUSLY?

In order to secure and reuse Information more efficiently and effectively.



Data management – filter information



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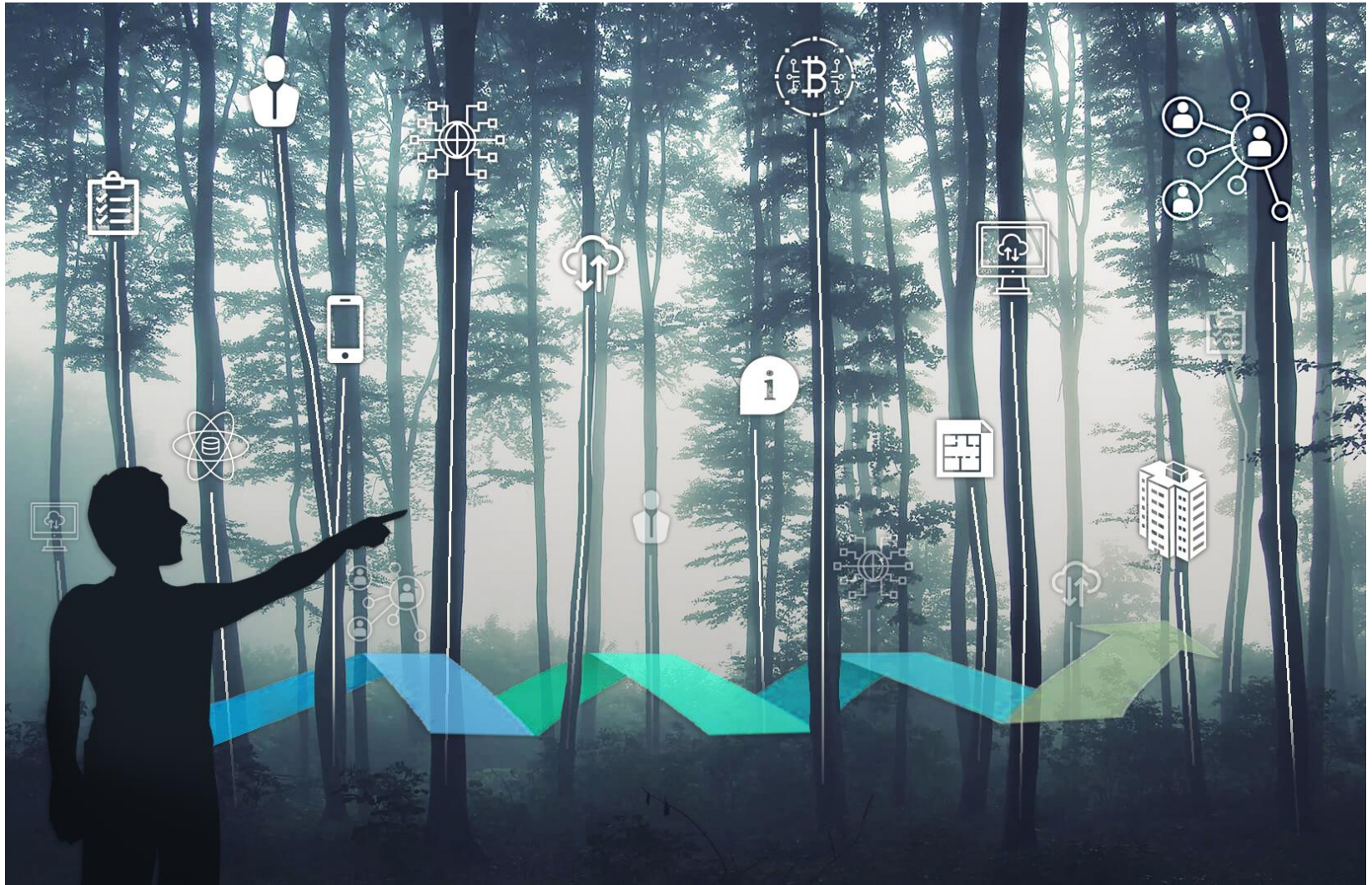


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Data management - Harvester



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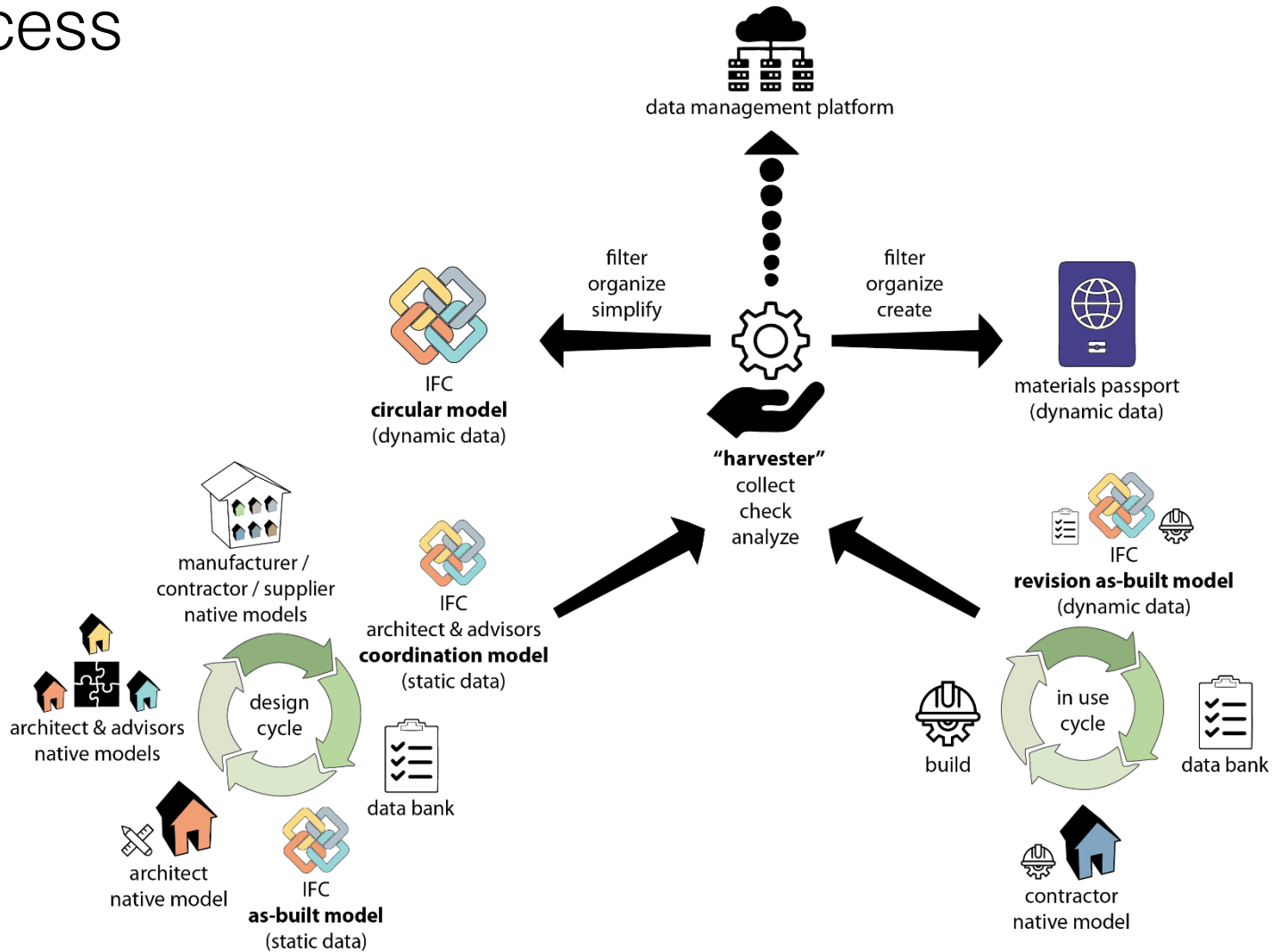


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Essential models and roles in the lifecycle process



To summarize...



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Conclusions

Conclusion #1

Circular design has a lot to gain by integrating BIM in the process. But in order to take BIM to its full potential, it is necessary to be clear on what we want to achieve with its use.



Conclusions

Conclusion #2

The process and stakeholders involved determine what kind of BIM model promotes circular design best: a life cycle model or a circular model.



Conclusions

Conclusion #3

Gathering and managing the information is essential. Agreements on how to exchange structured and relevant BIM information is also needed.



Conclusions

Conclusion #4

New methods lead to new tasks and stakeholders. A clear definition on the specific tasks of the “harvester” is needed in order to efficiently organize and check the gathered information.



JUST DO IT.

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Thank you!



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