



IAIA 21

VIRTUAL EVENT

#iaia21

SIA as a tool to take balanced decisions in the development of Engineering Projects

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Being and Engineer

- As a **creative and scientific activity** that **transforms nature to serve the needs and wants of large numbers of people**, engineering has both **physical and human dimensions**.
- Engineers address things and people, **bringing nature and humanity** together.
 - To modify nature effectively as desired requires **mastery of natural laws and phenomena**, thus engineering shares the contents and standards of natural science.
 - To ascertain what modifications are desirable requires an **understanding of human and socioeconomic factors**, thus engineering goes beyond natural science in its missions of utility and service.

(Auyang, 2006, p. 9)



Washington Accord

(Graduate Attribute Profiles)

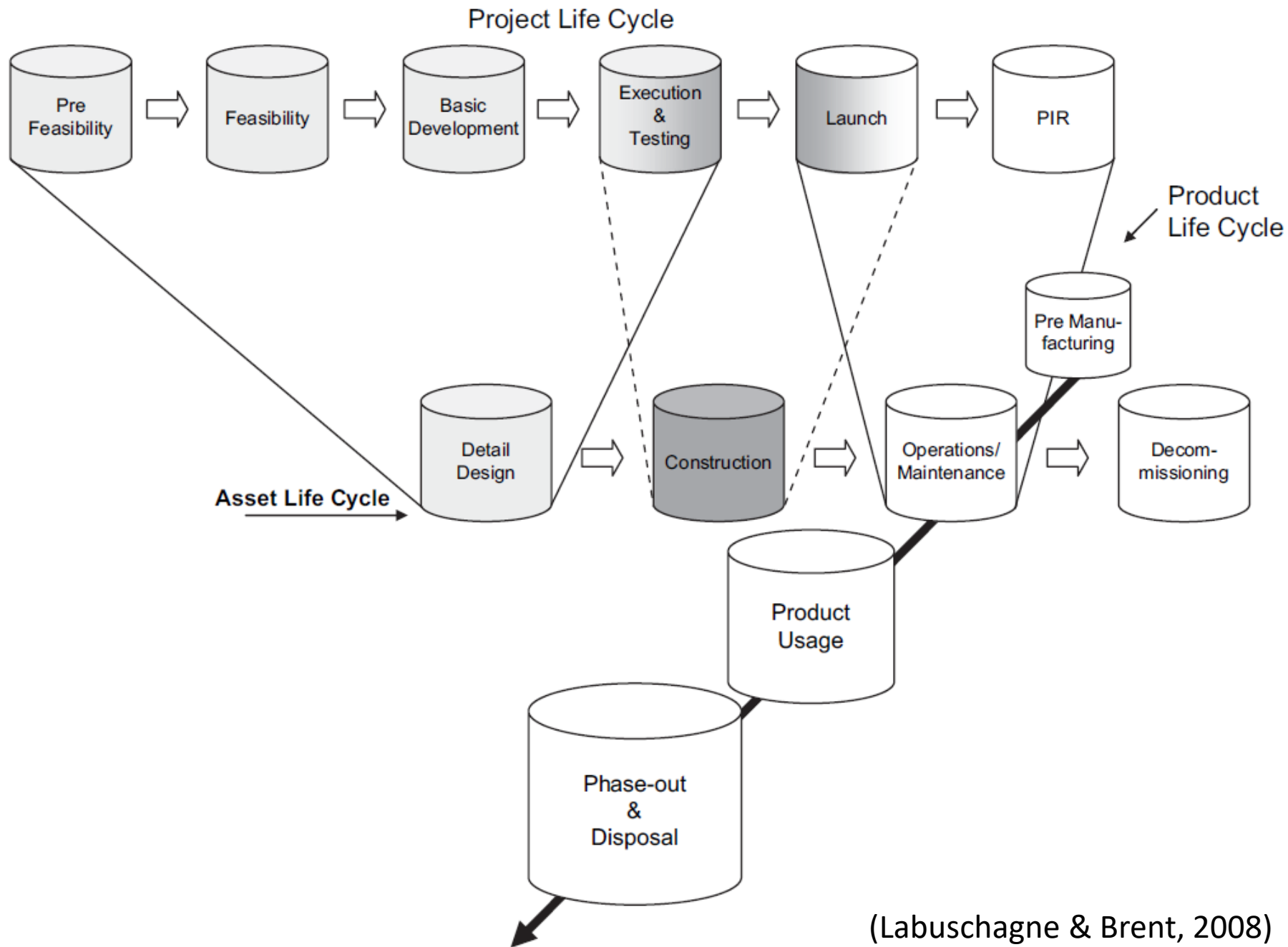
WA3: Design solutions for complex engineering problems and **design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.** (WK5)

(International Engineering Alliance, 2013. p. 10)

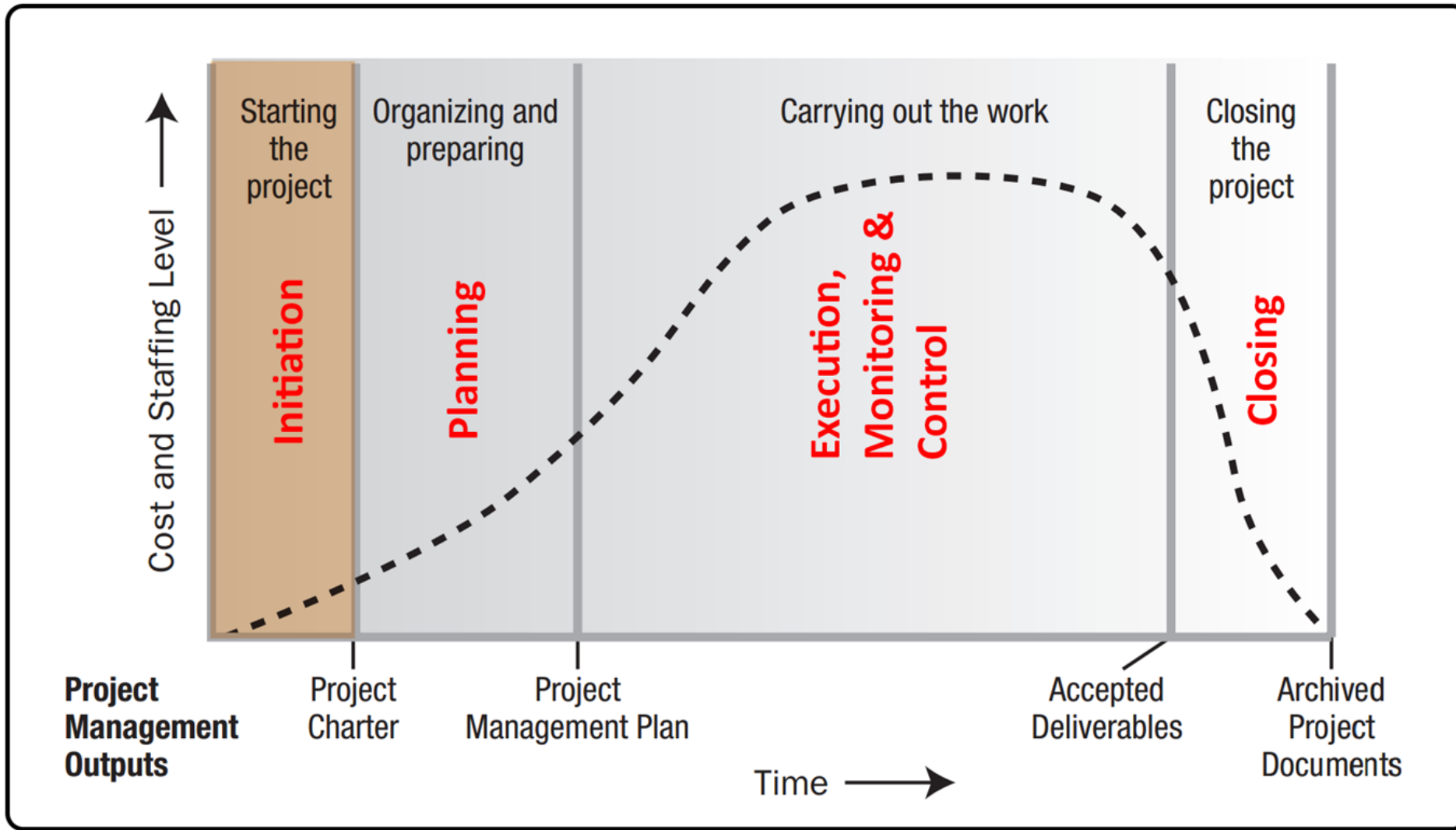


Electronic Industry (Negative) Social Impacts

- **Raw Material Extraction – Conflict Minerals (DRC)**
 - Violence there is worse than in any other place in the world
 - Slave work
 - Child work
 - Highest rate of sexual violence in the entire world
 - The most dangerous place to be born as a girl
 - The tool of choice is rape... in order to intimidate populations and punish populations for supporting other groups
- **Manufacturing**
 - They are not provided a contract. Working conditions can not be monitored
 - Work long hours: 12 to 14 hours
 - During peak production seasons they have to work overnight
 - Work with hazardous substances without protective equipment. They have got injured or later on developed industrial diseases
 - Employer hold their wages
 - Dormitories
 - Living in a container
 - Extension of labour control. Supervision and censorship of management
- **Disposal**
 - Export of toxic material to less developed countries
 - Uncontrolled e-waste processing operations caused serious pollution to local soils and vegetables



(Labuschagne & Brent, 2008)



(A guide to the Project Management Body of Knowledge, 2017)

• Phase I Initiation (SIA)

- Involve interested and affected parties (stakeholders) (**public participation**)
- Describe the proposed action
- **Baseline study**
- Scope (study of possible impacts, *Life Cycle*)
 - Investigation of probable impacts
 - Secondary and cumulative impacts
- Responses of interested and affected parties to impacts
- Alternatives to the proposed action

• Phase II Planning (SIA)

- Social Impact Management Planning
 - Summary of the previous social and impact assessment
 - **List of identified impacts** (positive and negative), phase, stakeholders involved, type of impact, probability, consequences, responsible parties, indicators
 - **Social Impact Management Plan (SIMP)**
 - Monitoring and reporting strategies
 - Mitigation and management strategies

• Phase III Execution (SIA)

- Monitoring (SIMP follow-up)
 - Compare actual and projected impacts
 - Detect deviations from the proposed action
 - Unanticipated social impacts.
 - Determine the nature and extent of actions needed when the impact is greater than expected
- Mitigation
 - avoid the impact without modifying the action
 - minimize, rectify or reduce the impact by redesigning or operating the project or policy
 - compensate for irreversible impacts through substitution policies, services, resources, opportunities.

• Phase IV Closure (SIA)

- Project evaluation
 - Check the effectiveness and cost of the SIA.
 - Improving the process of carrying out the SIA, and lessons learned for future projects
- social impact evaluation (Post implementation review)

References

A guide to the Project Management Body of Knowledge (Edición: 6th ed). (2017). Project Management Institute.

Auyang, S. Y. (2006). *Engineering: An endless frontier*. Harvard University Press.

International Engineering Alliance. (2013). *Graduate attributes and professional competencies*.
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Labuschagne, C., & Brent, A. C. (2008). An industry perspective of the completeness and relevance of a social assessment framework for project and technology management in the manufacturing sector. *Journal of Cleaner Production*, 16(3), 253-262.
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Let's continue the conversation!

Post questions and comments via chat in the IAIA21 platform.



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