



Dar Al Riyadh Insight #16

Flows in Large Complex Projects – Concept of Flows

Dar Al Riyadh Insights reflect the knowledge and experience of our Board, executives and staff in leading and providing PMC, design and construction management services. Dar Al Riyadh believes in the importance of broadly sharing knowledge with our clients and staff to improve project outcomes for the benefit of the Kingdom of Saudi Arabia.

Concept of Flows

In the world of Gantt, work progressed steadily from left to right on his now famous Gantt charts. Whether it is those classical Gantt charts or the modern work breakdown structures, we see a series of tasks connected by dimensionless arrows. They serially perform a set of transformative processes to deliver a well-defined output.

The only flows present in the project in Gantt's era were:

- *Transformative Flows* within the discrete tasks representing parts of the decomposed project.
- *Transformative Flows* of the project as the outputs of one or more tasks became inputs for a subsequent task or tasks.

Flows represent the transfer of *something* from one place to another. We will look at what these *somethings* may be shortly. In the context of classical project management theory, however, the *somethings* then were the transfer of outputs from one task to serve as inputs for a subsequent one. Flows include not just a starting point and endpoint, but also a path (of interaction) and a driving force. Think of the myriad of arrows on that Gantt chart.

A point worth noting is that in reality these “dimensionless” arrows connecting decomposed tasks are anything but dimensionless.

From the Dar Al Riyadh's team experience, this notion of a singular type of flow operating in a well-bounded environment does not fully describe the full range of flows that occurs in large complex projects. We now will define three types of flows in large complex projects: the classical **Transformative Flows**, but now accompanied by additional flows we call **Influencing Flows**, which arise from outside the project since large complex projects are not so well bounded (certainly not as Gantt would have experienced), and a third type of flow, **Induced Flows**, that arise from the interaction of a multiplicity of flows with each other.

Before defining and looking at each of these flows more closely, it is useful to return to the notion of the *somethings* that may flow.



What Is *Something*?

Flows represent the movement of *something* from one place to another. What are the *somethings* that flow in large complex projects? The next Insight in this series provides a partial listing of flows that may impact large complex projects, with the potential impacts being related to:

- Whether they were planned or unplanned.
- Whether they were coupled or decoupled temporally and otherwise.
- The point and place at which they arise.
- The extent of their influence (number of tasks affected; number of other flows affected).
- Their persistence (duration); stability (static, dynamic, chaotic); and second (and third) order effects.

The upcoming table broadly groups the flows as:

- Logistical
- Information
- Economic
- Environmental
- Stakeholder
- Technological