Unravelling the Dutch Semicon Value Chain

Regional Semiconductor Hot Spots Discovered!

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Ecosystem visualisations are generally made by positioning all stakeholders in that ecosystem against a background of a geographical map or in a value chain representation. Such representations do give a clear view on the players in their geographical location or in their place in the value chain but rarely link geographical location to activities in the value chain. An insight into the geographical distribution of activities may be a helpful instrument for policy makers.

Introduction

In this white paper, as an initial analysis, the semiconductor members of High Tech NL have been analyzed on their geographical location and their activity in the value chain and based on this information several revealing views have been created to unveil the geographical distribution of the semiconductor activities in the Netherlands.

The analysis

High Tech NL is the Dutch industry association (cluster organisation) for the high-tech industry. The analysis presented in this white paper is based on the High Tech NL member database per September 2025. From this database, the organisations with a distinguished role in the semiconductor industry were extracted (70+ organisations)[1]. These organisations were characterised by their role in the semiconductor ecosystem, their location in the Netherlands and their organisation size. Using these key figures, several visualisations are derived which are described in the next chapters.

[1] Due to this approach, it is noted that the information in this paper is not 100% reflecting the actual situation in the Netherlands as all data are based on the High Tech NL database of members (covering more than 80% of the Dutch semiconductor ecosystem (in FTE-count). However, this limitation is believed not to hamper the overall conclusions and overview.

The value chain

To characterise the organisations on their role in the ecosystem an abstraction of the semiconductor ecosystem was used as presented in figure 1.

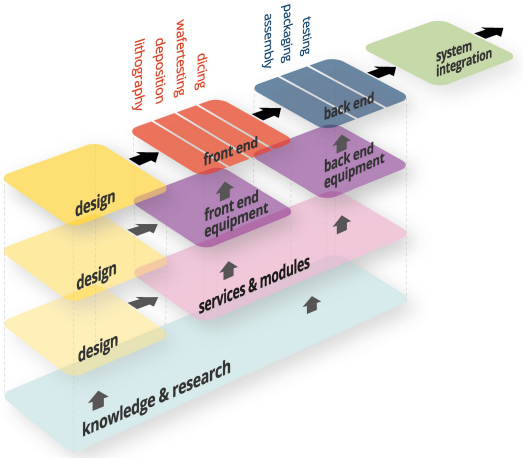

Figure 1 Abstraction of the semiconductor value chain

The top row represents the actual production of semiconductor chips and devices, from design of the chips, via the front-end production (the creation of the chips on the wafer), the back-end production (assembly, packaging and testing) and finally the use of the chips in systems (system integration).

The row below shows the activities on providing the industrial infrastructure needed to produce the chips; equipment design, front-end and back-end equipment production.

The next lower layer shows the support to the above positioned layers, services and modules. This layer provides the system modules that the equipment building companies integrate in the production machines as well as the design services, test services etc., to the layers above.

Finally, the knowledge and research layer where fundamental research and development is done for both semiconductor as well as the production equipment.

It should be noted that, although the processes as described above appear to have linear relations, the reality is that, in one way or another, each element interacts with all others in complex never-ending innovation circles.

The Dutch semiconductor ecosystem

Based on the company and location data, the following visualisation (figure 2) of the distribution of the Dutch semiconductor organisations across the Netherlands is created.

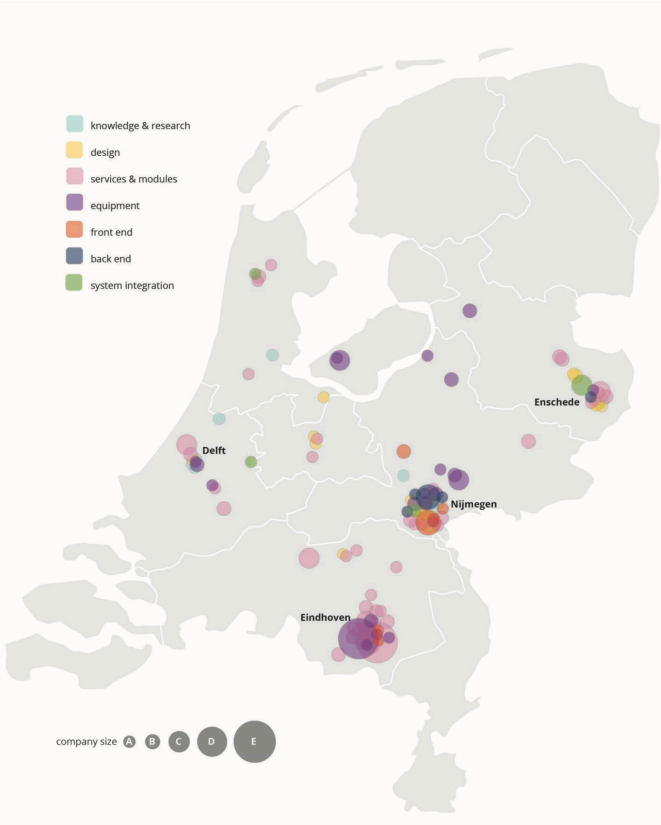

Figure 2 Semiconductor organisations across the Netherlands

Based on the company and location data, Figure 2 shows the geographical distribution of Dutch semiconductor organisations across the Netherlands. The size of the bubbles is based on an artificial normalisation derived from estimated FTE ranges, rather than actual company size. The purpose of this map is to illustrate where semiconductor activities cluster geographically, not to compare the relative size of companies or regions.

From this graph one sees that there are three main hotspots for semiconductor activities in the Netherlands: Eindhoven, Nijmegen and Enschede. Figure 2 also shows the thematic distribution across these hotspot regions with axis stretching into the Leuven area:

- Eindhoven area: machine building
- Nijmegen area: front-end and back-end chip production, machine building
- Enschede area: chip design.

In the following section, these three areas will be explored in more detail.

Regional details

For the three regions around Eindhoven, Nijmegen and Enschede the composition of that regional ecosystem has been analysed in more detail to present an insight in the relative distribution in that region of the distinguished steps in the value chain. Again, this analysis is based on the 5 categories in FTE-count and not on the real FTE count per activity as explained earlier.

North Brabant region

In figure 3 the relative volume of the semiconductor activities in the North Brabant area with Eindhoven as the centre is plotted. Due to ASML's presence, which has an extremely high FTE count, it was chosen to represent this regional ecosystem using two pie charts instead of one. The left pie chart represents the regional eco system without ASML and the right one represents the ecosystem with ASML (showing the suppression of detail in the remaining ecosystem).

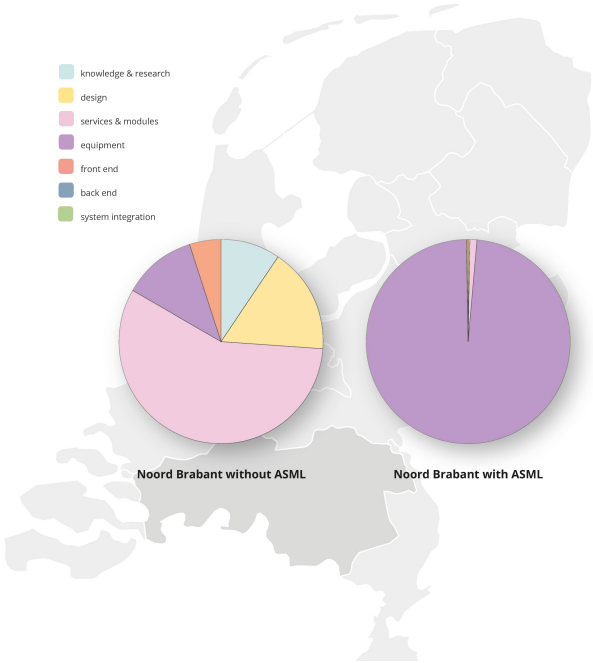

Figure 3 Relative volume of the North Brabant area semiconductor ecosystem

For this region, the large presence of equipment building and (partly closely connected) services and modules stands out clearly. Design, front-end production and knowledge & research complete this ecosystem.

Gelderland region

Figure 4 shows the relative volume of the semiconductor activities in the Gelderland region with Nijmegen as the centre and the distribution over the various activities in the value chain.
From this representation it is seen that there is a balanced mix of the semiconductor activities design, front- and back-end production, equipment and systems and modules.

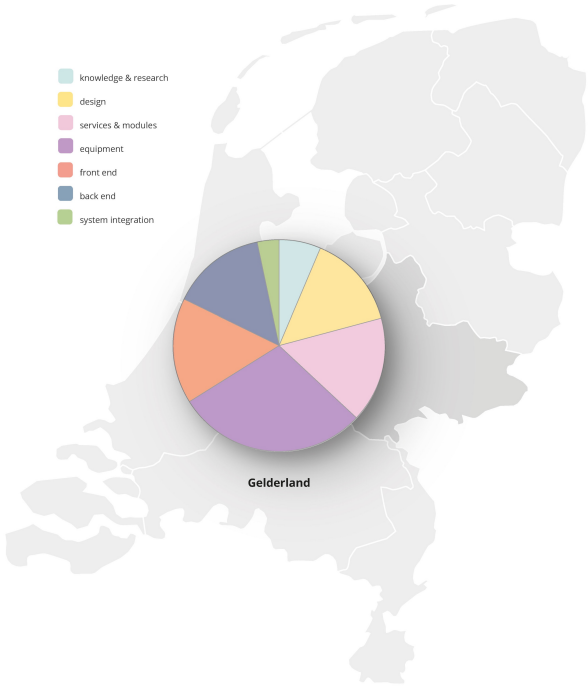

Figure 4 Relative volume of the semiconductor activities in the Gelderland area

Overijssel region

For the Overijssel region with Enschede as the centre the relative volumes of activities are given in figure 5. In this region, a relatively large share is found in chip design, services and modules.

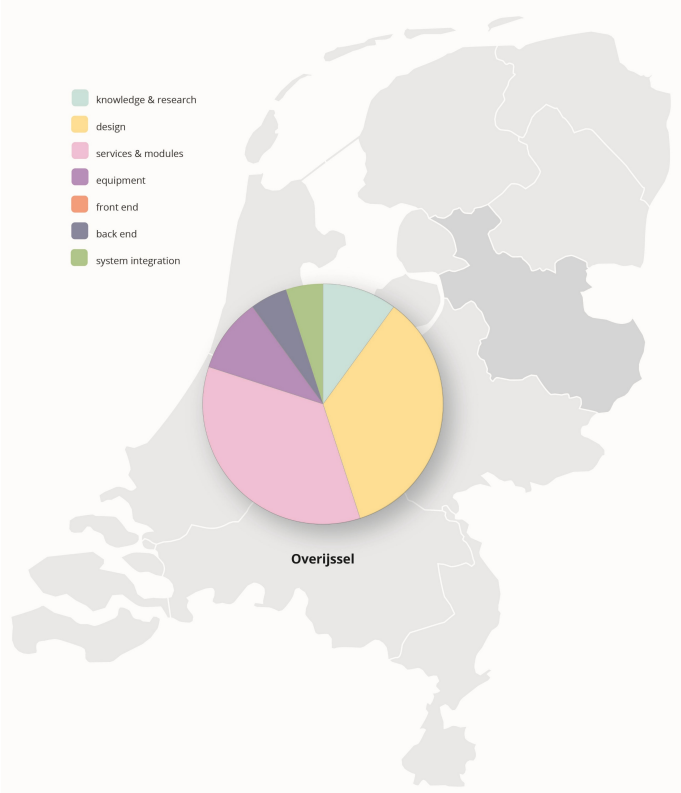

Figure 5 Relative volume of the semiconductor activities in the Overijssel area

Concluding

First, it should be noted that the graphs presented in the previous paragraphs do not indicate the actual size of the semiconductor activities in a region nor provide a regional size comparison as all is based on normalized company sizes.
The conclusion that may be drawn here is that the Eindhoven area and the Enschede area have distinct foci: equipment in the Eindhoven area and chip design in the Enschede area. In contrast, the Nijmegen area has a balance of semiconductor chips production as well as equipment.
The following paragraph will explore the regional distribution of semiconductor activities by comparing the FTE counts for a certain activity between the Dutch provinces.

Semiconductor activities per province

In this paragraph the distribution of one single activity across the various provinces is presented. Based on the size-categories adopted, for each province it is determined how many FTE (in normalized category weight) are present for a certain activity from the value chain. The higher the normalized FTE count, the deeper the corresponding color. This way of presenting the data enables a very cautious comparison of the activities per province. The results are presented in figure 6.

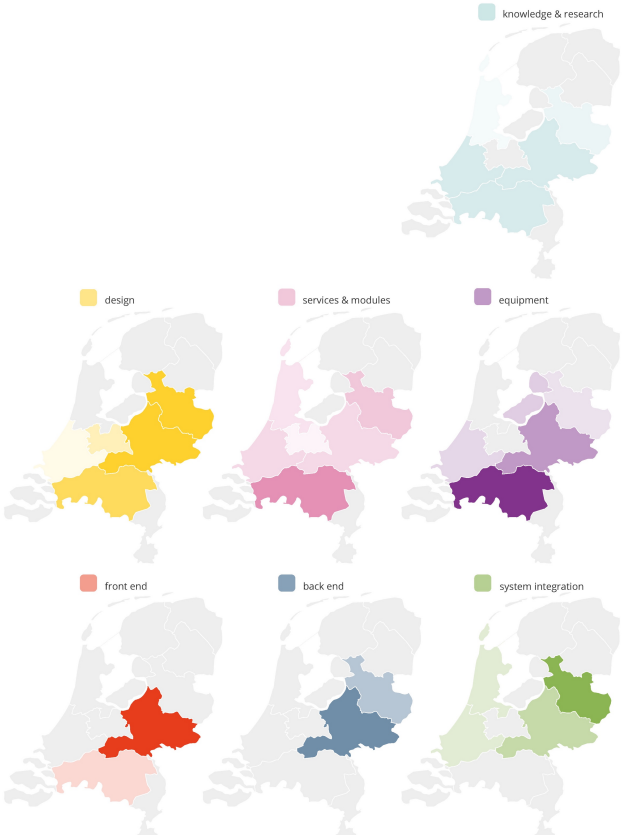

Figure 6 semiconductor activities per province

Looking from top to bottom in figure 6 starting with Knowledge and Research it is to be seen that most of the provinces do have Knowledge and Research institutes.
For chip design Gelderland and Overijssel have a clear focus, followed by Noord Brabant. Services and modules are best represented in Noord Brabant. For production equipment Noord Brabant is the hot spot in the Netherlands. Front end production has found its base in Gelderland whereas back-end production is mainly found in Gelderland and Overijssel as well as System Integration.

The fact that not all provinces have semiconductor activities attributed to them does not necessarily mean those provinces lack semiconductor activity; it can also be because there are little to no relevant High Tech NL members in that province.

Regional Semiconductor Hot Spots discovered!

The analysis presented in this white paper clearly shows that all elements of the semiconductor value chain are available in the Netherlands, but that activities are concentrated around regional hot spots. This is more than just a map — it's a tool for strategy, collaboration, and investment as Europe and the Netherlands define their next moves in the semiconductor domain.