

DIGITAL INFRASTRUCTURE AND ECONOMIC DEVELOPMENT

AN IMPACT ASSESSMENT OF FACEBOOK'S DATA
CENTER IN NORTHERN SWEDEN

EXECUTIVE SUMMARY



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DIGITAL INFRASTRUCTURE AND ECONOMIC DEVELOPMENT

AN IMPACT ASSESSMENT OF FACEBOOK'S DATA CENTER IN
NORTHERN SWEDEN

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PREFACE

THE BOSTON CONSULTING GROUP has analyzed the establishment of Facebook's large-scale data center in Luleå, Sweden—how it has affected the country economically and how it has contributed to the development of the country's digital infrastructure. The analysis and the conclusions presented in this report were independently developed by BCG using an academically grounded methodology, with detailed data inputs provided by Facebook.

Key topics and findings in this report include the following:

- Continued digitalization must be a key priority for Sweden if the country is going to enhance productivity and economic development. Investments in digital infrastructure, such as large-scale data centers, are an important contribution to this agenda.
- Facebook decided, after careful due diligence, to establish its first non-U.S. data-center site in northern Sweden in 2011, deploying leading innovation with regards to data center design and efficiency as well as the latest generation of server technology.
- The establishment of Facebook's data center is estimated to generate a total of SEK 9 billion in full economic impact (direct, indirect, and induced impacts) and to engage 4,500 full-time workers over the course of ten years nationwide; about half of the economic benefits will accrue locally. In 2012 alone, Facebook contributed as much as 1.5 percent of the local region's total economy. Furthermore, the establishment of Facebook's data center has laid the foundation for Sweden's competitive advantage in attracting additional data-center investments.
- Global data-center demand will continue to increase, with more than 60 new large data centers expected in western Europe by 2020. Sweden could compete for these investments and aspire to build a substantial data-center industry.

We hope that this report serves to illustrate the nature and magnitude of the data center opportunity for Sweden and to form the basis for continued discussions among ecosystem participants and national and local governments.

EXECUTIVE SUMMARY

DIGITAL INFRASTRUCTURE AND ECONOMIC Development: An Impact Assessment of Facebook's Data Center in Northern Sweden captures the importance of large-scale data centers to the Swedish economy and the opportunity they provide. The report illustrates the specific impact the establishment of Facebook's data center has had on economic development and job creation locally, as well as the implications for Sweden nationwide.

Continued digitalization must be a key priority for Sweden if the country is going to enhance productivity and economic development. Investments in digital infrastructure, such as large-scale data centers, are an important contribution to this agenda.

- Digitalization of the economy is key to driving long-term productivity gains in the Swedish economy and to sustaining relative competitiveness and economic development.
- Investment in the continued digitalization of society is key to drive economic development. Estimates project digitalization to contribute as much as one-third of GDP growth through 2018.
- As the world has become increasingly digitalized and connected, the Internet economy has continued to grow fast, reaching 7.8 percent of Swedish GDP in 2013. Swedish consumers are leading the growth, while private and government digital investments have tapered off.
- Large-scale data centers are forming the backbone of the global digital infrastructure together with telecom equipment and services. Explosive growth in data traffic and storage needs is driving significant investments in large-scale data centers, which are important for Sweden to attract.

Facebook decided, after careful due diligence, to establish its first non-U.S. data-center site in northern Sweden in 2011, deploying

leading innovation with regards to data center design and efficiency as well as the latest generation of server technology.

- Facebook, the world's largest social network and most popular website, is growing fast. Facebook's user base is increasingly global, with more than 80 percent of users outside North America. To meet the resulting data-capacity needs, Facebook is investing heavily in expanding its data-center footprint globally, locating its first non-U.S. site in northern Sweden.
- Geographical site selection is a key parameter in optimizing Facebook's digital infrastructure, and significant due diligence was conducted to secure an attractive site that fulfilled the company's economic, energy, climate, human-capital, and infrastructure needs.
- Facebook is also actively pursuing data center and server innovations that will enhance energy efficiency and maintain the smallest possible environmental footprint.

The establishment of Facebook's data center is estimated to generate a total of SEK 9 billion in full economic impact (direct, indirect, and induced impacts) and to engage 4,500 full-time workers over the course of ten years nationwide; about half of the economic benefits will accrue locally. In 2012 alone, Facebook contributed as much as 1.5 percent of the local region's total economy. Furthermore, the establishment of Facebook's data center has laid the foundation for Sweden's competitive advantage in attracting additional data-center investments.

- Building large-scale data centers, such as those at Facebook's Luleå site, requires significant direct investment—approximately SEK 4 billion over 18 months to bring each data center online. This expenditure does not include server or network refreshes. In Sweden specifically, about SEK 1.5 billion of domestic spending was invested in the initial data center, and an additional SEK 800 million of domestic spending is planned for the second one. Furthermore, when fully up and running, the pair of data centers is expected to cost SEK 316 million to operate, with 92 percent of that direct spending in the local area.
- The accumulated economic impact (direct, indirect, and induced impacts) on Sweden over the first ten years of construction and operation totals SEK 9 billion, of which half is impacting the Luleå region.
- Over the same ten-year period, an estimated total of 4,500 full-time-equivalent workers will be engaged. This estimate is based on direct, indirect, and induced impacts. In 2012, a total of 1,000 full-time workers were engaged nationally across all affected industries, of which half were employed in the Luleå region, contributing as much as 1.5 percent of the local region's total economy.
- The presence of Facebook has resulted in several other positive effects, specifically the emergence of a new ecosystem of infor-

mation and communications technology (ICT) companies, the establishment of regional support organizations, public and private investments in local infrastructure and utilities, a boost in regional publicity, an increase in the number of applications to Luleå Technical University, and the establishment of follow-on data centers nearby.

Global data-center demand will continue to increase, with more than 60 new large data centers expected in western Europe by 2020. Sweden could compete for these investments and aspire to build a substantial data-center industry.

- In the coming five to ten years, the continued digitalization of society will drive demand for building data centers globally. In western Europe, an incremental need for about 60 new large data centers is expected by 2020, with increasing flexibility in location choice.
- Sweden is well positioned as a data center location, ranking among the top three globally. De-averaging to specific regions, northern Sweden stands out with specific favorable characteristics, including access to stable and renewable energy sources, modern infrastructure, and a cold climate that is optimal for efficient cooling.
- Hosting data centers could turn out to become a substantial industry for Sweden, creating more economic benefits and jobs, while strengthening the digital infrastructure and ecosystem further.

On the basis of our research, we encourage further debate on how Sweden can sustain and accelerate its position as an attractive location for large-scale data-center operations, and thereby further strengthen the build-up of leading digital infrastructure.

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