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## **Some Basic Principles for Building the Successful NMA of the Future**

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**Paper 7.6**

# Some Basic Principles for Building the Successful NMA of the Future

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## From classical, traditional map series to real-time virtual reality

National Mapping Agencies developed early in the history of nations and, important to the powers that struggled to keep the nations intact as they were, NMA's were given substantial resources to produce the most current, detailed and precise geographical maps possible.

In many ways, that is still the case for most NMA's. The NMA's have perfected the art of producing maps over centuries. And until some twenty-five years ago, the products developed by the NMA's did meet the requirements of their primary customers perfectly well.

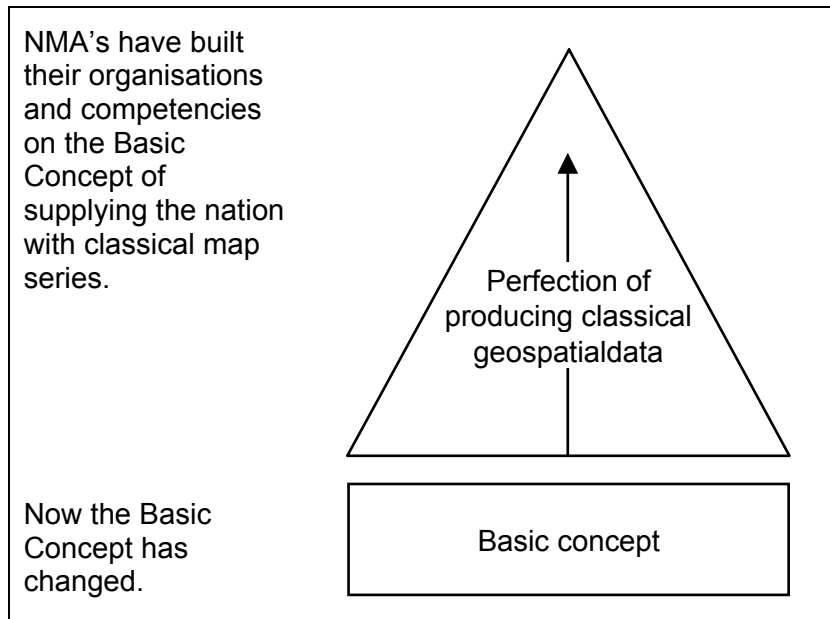
Or rather, the available technology limited the use of the information that the NMA's collected and turned into large series of printed paper maps. As soon as computers started to invade more desks and became more powerful, the demand for geospatial data for all kinds of analyses exploded.

The NMA's responded by making their traditional products available on computer media, but an important shift in the mechanics of the market of geospatial data had taken place.

A shift that requires that the NMA's of today and tomorrow decide where they will focus in the future: on the traditional products or on the fulfilment of customer requirements. The customer has changed and the way he uses the NMA products has changed too. The military high command will still need mapping and so will the other traditional users of geospatial data. But a myriad of new uses have emerged and the databases collected by the NMA's are more often looked upon as data for virtual reality representations than as the traditional map. Furthermore, virtual reality requires constantly up-to-date data and the release of a map series every other or third year is most often not sufficient for optimum use.

<b>NMA's face a challenge: Where to focus?</b>	<b>Yesterday Traditional Priority</b>	<b>Today and tomorrow, the required Priority</b>
Standardized, traditional map series	1	3
Perfected production of traditional products (quality, precision, coverage, etc.)	2	2
Fulfilment of customer needs, e.g. near-real-time data vs. perfection, thermal data, etc.	3	1

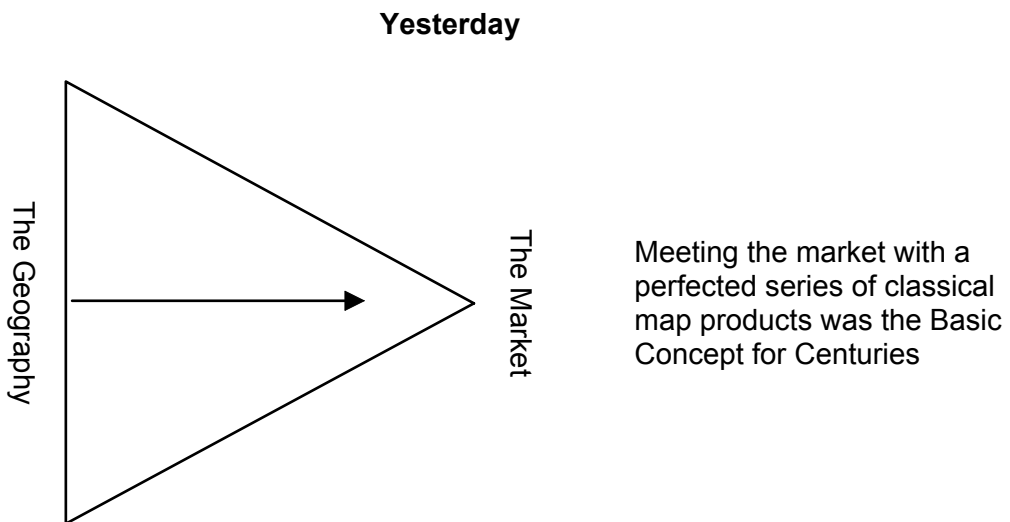
In other words, the NMA's have been working from a basic concept of map making for centuries, a concept which has recently changed and which put new demands on the NMA.

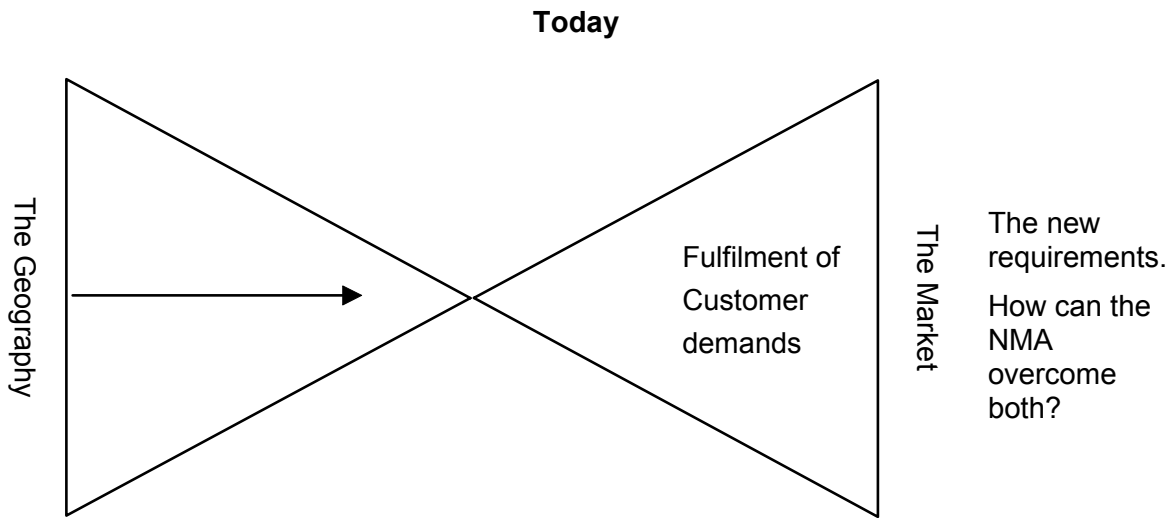


**The Pyramid of Perfection**

Over the years, the Basic Concept has typically been developed and perfected together with a few highly influential governmental agencies.

The consequence of the above Pyramid of Perfection is that the NMA's cannot meet the new requirements of the new focus, namely fulfilment of the customer requirements, by continuing upwards in the Pyramid. The Basic Concept has changed - the Pyramid needs a new foundation.



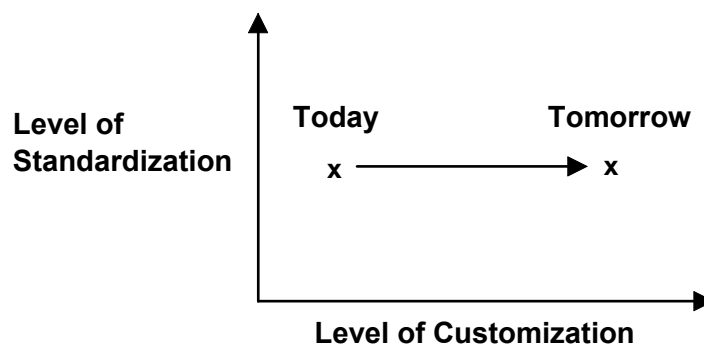


### A new role also requires new competences

The new Basic Concept has implications for the focus, and thus the overall competences of the NMA. What is the core competence of the new NMA defined as? It is no longer the Pyramid of Perfection, creating the data sets as in yesterday's NMA, but the ability of meeting the market with the required products and services. The change can therefore also be shown as in the figure below:

Yesterday		Today
Creating Products	Core Competence	Market Fulfilment
Production	Necessity Competence	Creating Products
Data supply	Routine Competence	Production
None	Outsourcing	Financial etc

Seen from a market positioning point of view, the products and services have to move from a high standardized level to a high customer tailored position while still keeping the cost under control.

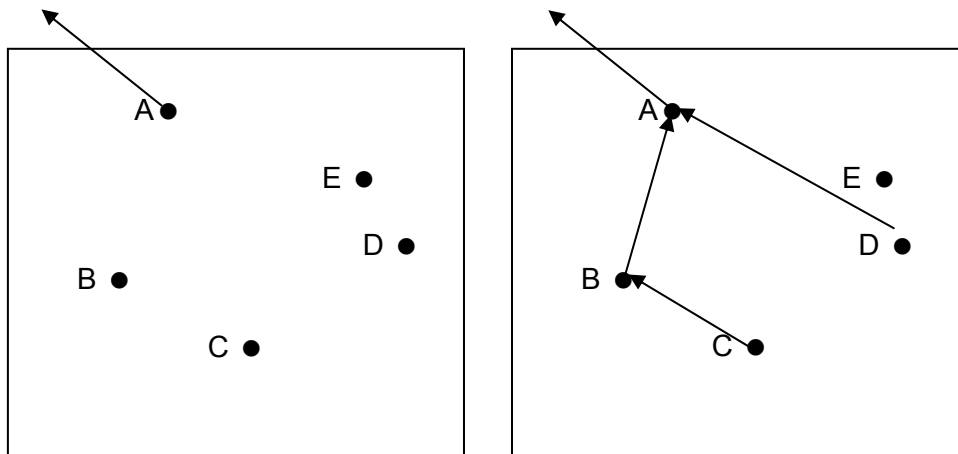


## From Government Agency to Commercial Entity

The NMA's also face another change. In most nations, the NMA's have undergone, or are undergoing, the change from government run agency to a partly or fully commercial owned entity that must operate and compete in the market.

That is a substantial and difficult change. But contrary to the beliefs of most people, the NMA's are not the only ones to change, if the change is to be successful for the market.

The NMA's cannot be seen as an independent player in a market – especially not when operating on commercial terms. A market is made up by a series of inter-connected value chains, and the NMA is a part of many of those value chains – from suppliers of raw-data (information) up-stream in the value chain to customers down-stream. And one of the reasons that the NMA's have had to consider their focus is exactly the fact that the customer down-stream in the value-chain is setting new demands. Similarly, when the NMA sets out to change, it will put new demands on its suppliers.



When A moves, this implies that B and D and even C must change too if the chain is not to break.

So, when the NMA's are about to change because they are transforming from governmental agencies, and perhaps also changing their focus from the classical paper map series to be suppliers of data bases, the other players of the value chain system of the NMA's must change too or the NMA's have to look for new vendors fulfilling their needs.

## How to do it successfully

This is a challenge. However, we believe it can be tackled and we think we have found a way. The recipe is a partnership based on controlled outsourcing as described and defined below.

The critical success factor:

*A shared and articulated vision that is followed up by the ability and will to change.*

The shared vision serves as the foundation for building the relationship and for formulating the condition for the services delivered:

- Perspective of co-operation
- Perceived value

- Characteristics of services
- Level of services
- Quality, time and cost
- Management and controlling system
  - Accreditation
  - Quality assurance
- Time schedules

The following statements are two helpful tools:

- Visualise the value-chain from technology suppliers to customer's customer and decide which competences are able to handle which parts of the value-chain most efficiently (time, quality and cost).
- Consider the cost of the whole value chain under one: "our cost is your cost and your cost is our cost" (praise to OSGB for formulating this important vision).

The activities mentioned have one common aim: building trust across the borderlines of the NMA's and the subcontractors at all levels of co-operation. Trust is the foundation for transparency in the co-operation. More information revealed increases the level of confidence in the co-operation. On the other hand, it also creates anxiety in both organisations.

Revealing information on core business and key figures will always be difficult.

However, the gains achieved by transparency give a great opportunity of designing the right mix of quality, time and cost. It is unquestionable that the service has to be delivered according to the specifications:

- Can some of the elements be discussed?
- What about the priorities?
- How to interpret the specifications?

The implication of the outsourcing is huge for both the NMA's and for the outsourcing companies, understanding the specific aims and conditions for the NMA's and the implication in connection with the services delivered to the NMA's.

Synchronizing the transition, e.g. building a new value chain in a partnership, is one of the major foundation blocks for the co-operation. The steps to fulfil this vision may be the following:

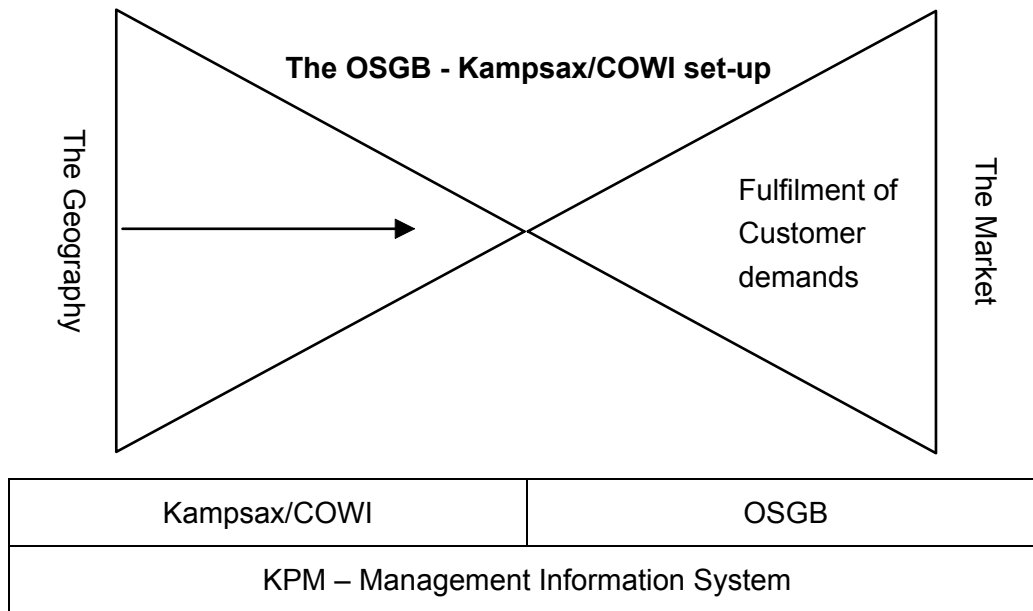
- Map the current value chains
- Discuss and map the aims and goals
- Discuss and map the key performance indicators (KPI's)
- Build a new value chain
- Check the new value chain towards the new competence map of the NMA's

The new competence map will typically show:

- The core competence of the NMA's is fulfilment
- Production of maps is a routine competence

The production can be outsourced to what we call "controlled outsourcing".

### Controlled outsourcing



The "Pyramid of Perfection" is tilted. The controlled outsourcing will now provide the "products", which was formerly the main goal of the NMA's. The foundation, the Basic Concept, is now based on the concept of uncertainty and change. Questions as the following may appear:

- How do we learn about the need of the customers?
- How do we fulfil the needs?
- How do we develop the products needed?
- Can we configure products based on current products and services or do we have to establish new sources of information?
- How do we set up supply chains for this?
- How does the value chain look?
- How does our new competence map look?

Discussion and formulation of answers to all questions have to be made in the perspective of the whole value chain. It is therefore imperative for the NMA's still to "control" the major part of the supply chain to some degree, e.g. the production.

Sharing detailed information throughout the value chain provides the ownership with a controlled overview and insight in the production flow, e.g. controlled outsourcing. The "controlled outsourcing" may consist of more elements:

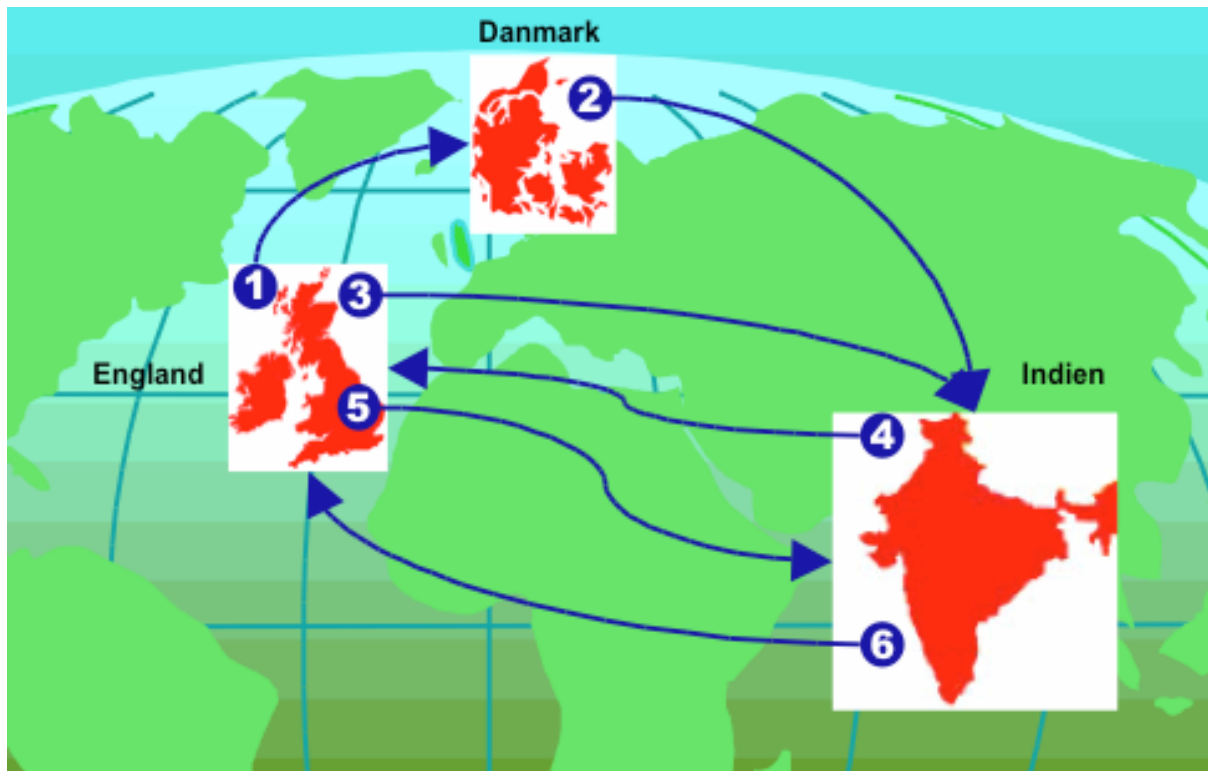
- Sharing a production work flow information system
- Sharing a quality assurance system, including reporting facilities
- Auditing plan
- Production schedule
- Accreditation of systems and employees
- Training programmes

To share that kind of information is key to establishing a true and working partnership. Furthermore, it gives the NMA's control of crucial issues, as for instance managing their outsourced production. This also implies optimizing the whole value-chain in close co-operation with the outsourcing partner to realise the vision: 'our cost is your cost and your cost is our cost.'

## Examples of how we did it

To share information we have established a process management system (KPM). The KPM data is a key to establish a true partnership.

We will show an eye-opener of the actual geography of the OSGB-KX/COWI map production system in our presentation.



*The KPM system keeps track of the data, production parameters and QA information as the data moves through the various work-processes in Great Britain, Denmark and India.*

In our presentation we will also be showing eye-openers from the actual KPM system (time, cost, quality) and summaries, graphical overview and statistics.

Does it work? – we will show facts from the production system (capacity, etc.). We still have challenges ahead, but we believe the set-up is superior to the prior work share and thus a success.

## The learning

The implication for other NMA's is that a substantial short-cut in the transition from yesterday to tomorrow is possible - and available as a proven and tested concept.