

SDC – A New Software Development Model

Lars-Chresten Ekebjærg, Software Development Manager,
Shanghai Development Center, DHI-Denmark

Thomas Bech, Program Manager
DHI-Denmark

Wang Bo, Team Leader
Shanghai Development Center, DHI-China

Abstract

Development of software products and services will over the coming years become increasingly important for DHI Water & Environment (DHI). Software products, customization of products and customer specific solutions like Decision Support System will even more than of today become a differentiating factor for DHI.

This implies that time to market for new software product or software services will become very important. In order to meet these requirements DHI Software has had to scale-up and improve its software delivery organization – with respect to agility and cost.

The world is becoming ever-more connected which requires enterprises like DHI to think and act globally. It has thus been naturally for DHI to increase its software product organization through establishing a decentralized and global software development organization.

DHI Software Product Organization

Today DHI Software is organized in three different Strategic Business Units (SBU) that targets the water resource, urban and marine market segments. The three SBUs coordinate activities through a number of standing committees. Coordination is required for a number of reasons, e.g.:

- Software components are shared between the SBUs
- The SBUs release their products together

This organization of the software product business has served DHI well for many years. However, DHI is constantly looking for ways to improve its software product development capacities.

- In order to increase the production more software developers are needed. However, today qualified software developers are not readily available in Denmark – or for that matter in the whole of the western world.
- There is a market requirement of more and more new features.
- The quality of the production has to be at a high level
- The software organization has to be able to scale-up in order to meet the above requirements – this requires a new software development model in order to avoid potential bottlenecks.
- The product prices need to be at a competitive level – this in turn requires that software development costs also must be at a competitive level.

Outsourcing of Offshoring

The aim of increasing the software production capacity made the DHI Group Management to investigate into offshore development possibilities. An external consultancy company was in 2004 asked to assess the readiness of the Software Product organization to outsource or offshore parts of the software development value chain. The consultancy company concluded that DHI Software with advantage could relocate parts of the development activities to a region with a more optimal cost

structures than the Danish one. However, this should be accompanied by a change in the Danish part of the operation:

- Product planning should take place on a longer timeframe. Until now planning has been limited to one release cycle.
- The competency structures should be changed with an enforced focus on project management and integration/acceptance test.
- A project model spanning both the Danish and Offshore part of the organization should be established.

Based on these recommendations DHI Software established a number of relocation preparation activities:

- Pilot projects – Two candidate offshore partners were selected, a Sri Lankan and a Bangladeshi company. Each company was asked to execute two software development projects for DHI. The projects were specified and managed by Danish DHI Software staff.
- Process model development – DHI Software adopted a new process model based on the well-know Microsoft Solution Framework (MSF) model. This is an iterative and agile model used by many software houses. MSF includes both a role and a process model; DHI Software opted to – as a start – only to focus on the role model.
- What activities to offshore – software development consists of many activities that have to be executed either in parallel or serial. The question was what type of activities that would be most suited for *offshoring*. The decision was to start out with activities related to implementation design, the actual implementation and related test – i.e. the activities very near to the coding. The management wished to maintain software development competencies at the main office, why it was not decided to pursue a full business process outsourcing model; but rather retain a part of the activities related to implementation with the Danish organization.

The lessons learned from the pilot projects included:

- It was clearly possible to specify features in order for an offshore partner to implement them.
- Having dedicated resources provides for much faster development.
- Initially project management must come from experienced DHI Software staff
- Time must be allocated for building competence in DHI Software products at the offshore site.

All in all the experiences were judged sufficiently positive for taking the last step in order to establish an offshore development center.

Shanghai Development Center

After careful consideration, the DHI Software Management suggested the Group Management not to enter an offshore agreement with a partner company; but instead build its own software development center at a suitable location. The reason for this was to retain full control of the operation within the DHI Group. Having maximum control was assessed more important than a – probably – quicker up-start period.

This decision meant the birth of the Shanghai Development Center – co-located with DHI-China. The center which became operational on the first of February is seen as a significant step forward towards increasing the volume of software development.

Now nine months later and with the release 2007 of the DHI Software products very imminent it is a good time to step back and look at the center and what has been accomplished. Has it lived up to the expectations? Indeed and more so. The center was launched with a core group of three software developers and a Danish manager. Since then the SDC has more than tripled in size and substantial expansions are planned again in 2007.

In its just nine months long life the SDC has undertaken a number of development projects of which 2/3 will be part of the DHI Software 2007 release. A few examples of the development projects, which have been carried out by the SDC are:

- The Workgroup Support in MIKE Zero is a feature, which takes Marine and Water Resource modeling into a new era. With the Workgroup Support feature, the focus is now on the economy and quality of projects which involve modeling. Until now the focus has been the scientific quality of the computational engines and providing user-friendly interfaces. The Workgroup Support is targeted at project execution economy, data sharing within project teams, audibility etc.
- The Simplification wizard in MIKE URBAN is a feature that reduces the complexity of the network, thus improving efficiency of the hydraulic simulations without compromising the integrity and accuracy of the model. With this feature it is much easier to get started using MIKE URBAN. The feature includes tools for data scrubbing, trimming and merging

The SDC model as adopted has proved to be most successful with deliverables on time and to specification. Strong ties have quickly been established between the various product and project managers based at DHI headquarters and the Shanghai developers. The quality of the deliverables have so far been – at the least - comparable to past development efforts undertaken by DHI. This is partly due to that DK project managers have been freed to focus on specifications and quality assurance, rather than technical implementation issues.

All of this has contributed to the success of the center – success users of DHI Software will benefit from already with DHI Software 2007.