Title	**Home grown or Shop bought: When and Why?**
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1.1. Abstract

1.1.1 Introduction:

NREN engineers and computer scientists provide highly sophisticated solutions to the Research and Education community. It has become increasingly obvious that there are two camps in delivering these solutions to the community: "home grown" or "shop bought". NRENs are required to keep costs as low as possible and are responsible to their members and governments, vendors want to sell equipment, but at the same time want to be trusted partners. The question therefore really is what is the most cost-effective solution is under what circumstances.

For the sake of argument the paper will be written from three differing viewpoints:

- a vendor : Andy Vallely (Cisco)
- a proponent of "shop bought": Mario Vandaele (Belnet) and
- a proponent of home grown Szabolcs Szekelyi (NIIFI).

Discussions in a number of NREN meetings, including the TNC and TF-Storage meetings, has highlighted the different positions held by representatives of various NRENs and the vendor's difficulty in understanding the considerations that have led to them. The paper and the presentation will address the topic from a vendor neutral perspective – there will be no attempt to highlight any specific vendor feature or product even though one of the presenters works for Cisco.

This paper will examine the decision criteria used to determine when to develop solutions "in-house" using open source resources and when it is appropriate to buy commercial off the shelf (COTS) products. The paper will examine development process, cycles and initial costs of implementing the home grown solution versus the costs involved in procuring a solution from a 3rd party. These costs should include the cost of running a procurement process, testing and implementation. In both cases the on-going operational costs need to be understood, including maintenance and support.

In particular, the paper will examine these approaches in the light of Software Defined Networking where the borders between the two approaches are blurring.

1.1.2 Considerations in COTS v Home grown

This section will examine how the decision is made within the Belgian NREN, Belnet. It should be noted that there is no formal process to determine whether to develop or buy, this is based on the experience of the Project Manager when deploying a new service for a customer. The lack of a formal process means that this section is based on the views and experiences of Mario Vandaele of Belnet.

The paper will describe the development of the business plan. A business case is the result of multi-disciplinary team, which formulates detailed answers to a number of questions. This includes the solution definition phase, where the requirements and stakeholders are identified and mapped to a new solution. This will also examine what activities are commonly used to identify existing commercial solutions and how to identify gaps against requirements. The decision making process must also consider the timescales required by the customers and the in house skills to determine the feasibility of home-development.

This section will also examine the different factors that might be considered when making the decision.

1.1.3 COTS v Home grown

The proponent for home grown development discusses the benefits in terms of agility and draws comparisons with buying the solution from a vendor. The author will expand on his personal experiences at NIIFI (the Hungarian NREN) This area will compare and contrast the solutions from each perspective and examine the impact of choosing one route over another. The author will examine the issues around solution development and maintenance, and will consider the ease of implementation and upgrade. Additionally the author will examine the levels of complexity, inherent in each approach.

This section will address the argument that home grown is often unnecessary and leads to duplication with existing COTS products. This will address methods for developing solutions and the impact to this discussion of the advent of Software Defined Networking.

1.1.4 Conclusion

The paper will present with a comparison of both viewpoints, and will offer recommendations around the consideration, planning and decision making required to best provide the service to the customer and serve the best interest of the NREN community and constituents.

1.2. Acknowledgement

Klaas Wierenga, Consulting Engineer, Cisco

1.3. Biographies:

Andy Vallely:

Andy VALLELY is a TOGAF certified IT Professional with 24 years experience in both customer and vendor environments. Andy joined Cisco in January 2000 as Systems Engineer in the UK Public Sector team; working with central government departments and the law enforcement agencies. In 2005 Andy moved to the EMEA team and was the Consulting Systems Engineer supporting both NATO and the UN Agencies. In August 2008 Andy took up a role supporting the Education sales teams for the region with a strong focus on Higher Education and the NRENs; and is Cisco's substitute representative on the TERENA General Assembly.

Andy obtained a BSc. Hons. in Computing and Organisational Studies at UCLAN; whilst also working full time for IBM as a Network Consultant. Whilst at IBM, Andy co-authored an "IBM Redbook" on Design and Implementation of Campus ATM LAN Emulation networks. Prior to joining IBM Andy worked as a Network Analyst at a large UK based insurance company, following 5 years working in the UK Civil Service in an administrative capacity.

Mario Vanaele:

Mario Vandaele is a project manager in the Services department at Belnet since 2010. His main responsibility is turning ideas into operational services for the Belgian R&E community, such as Cloud services. He has in total 13 years of experience in ICT, Telco, Finance & International organizations in a variety of roles. Between 2003 and 2006 he was project manager at the European Space Agency where he was in charge of building an earth observation data dissemination service on top of the Géant network.

Since 2006 he continued as project manager/consultant for both the private and public sector, where he frequently had to make "shop bought" or "home grown" considerations for the delivery of new products and services. Within Belnet he utilizes his skills and past experiences in the matter to aid Belnet in making this kind of decisions.

Szabolcs SZÉKELYI:

Szabolcs SZÉKELYI began working in the IT industry in 2005 with monitoring systems, and earned an MSc in Technical Informatics in 2006. He switched to the Reaserch and Education community by joining NIIFI, the Hungarian NREN in 2008, where he became the lead architect and developer of storage solutions (disk and tape based) and cloud solutions. He is a frequent speaker at TERENA's TF-Storage meetings.