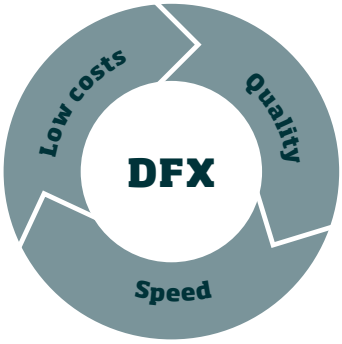
GPV

DFX - Design for Excellence

Design & Engineering Services

DFX success factors:
Low costs, quality, speed

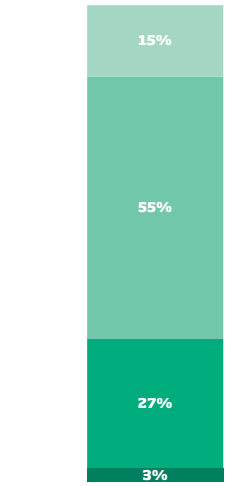


Holistic design phase speeds up time to market

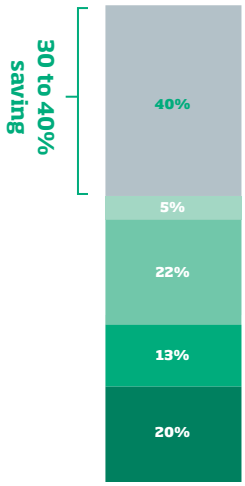
DFX (Design-for-Excellence) is virtually essential if your product is to have the best possible chance of succeeding in the marketplace. GPV has qualified specialists covering every discipline.
Benefits to the customer:

- **Everything under one roof, so fewer interfaces to deal with**
- **Early detection of unnecessary cost drivers (design, materials, construction, testing)**
- **Faster time to market (shorter design phase, experienced industrialisation teams, speed prototyping)**
- **Lower design costs (unnecessary development loops avoided)**
- **Early risk assessment and minimisation by expert team**
- **Optimised material costs and logistics**
- **Focus on quality (experienced in best practice, pre-series production environment)**
- **Minimal obsolescence risk**

Conventional development



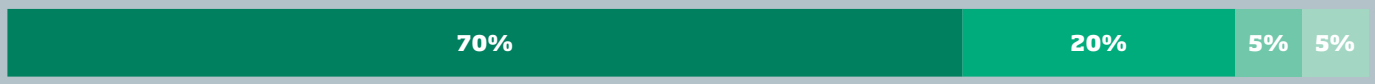
System Design (=DFX)



Test / Documentation
Verification / Iteration
Design
System analysis / Specification

The design dictates the price

Impact on product price:



GPV Design Support

- Approx. 70 engineers and technicians
- DFX - Design for Excellence

Production management

- International group configuration Asia/Europe/The Americas

Materials management

- Strategic procurement
- Obsolescence management
- Preference programme for Asian manufacturers

Administration & distribution

- Flat organisational structures
- Direct transactions possible with every company

Classic supplement calculation (example)

100%	=	production costs
5%	+	R&D overheads
20%	+	Administration overheads
	+	Distribution overheads
	=	Production costs
15%	+	Manufacturing costs
60%		Material costs

DFX disciplines at a glance

Design-for-Manufacturing (DFM)

Optimised PCB design ensures simplified and efficient production of assemblies:

- **Key factors for layout (pad measurements, component configuration, etc.) incorporating manufacturing processes**
- **Aspects regarding the printed circuit board (surface finish, solder mask, screen pattern & labelling)**
- **Component requirements**
- **Documentation requirements**

These guidelines form the basis for minimising production costs, waste and quality risks.

Design-for-Testability (DFT)

Quality assurance thanks to optimal test methods.

- **Establishing the ideal test combination using several methods**
- **Avoiding test gaps to achieve the agreed quality standard**
- **Avoiding duplication (double testing) to optimise costs**
- **Maintaining service efficiency: even during maintenance, products can be thoroughly tested for rapid error diagnostics**

Thus, assemblies and systems are tested according to plan, i.e. at low cost and according to legal and individual customer requirements.

Design-for-Cost (-Optimisation) (DFC)

Optimum material costs and coordinated logistics produce a low-cost solution. Material costs account for 60-80% of the selling price, so early involvement of our strategic sourcing option pays off.

- **Supplier relationship management: network of GPV preferred suppliers, developed to groupwide quality and supply chain standards**
- **Component engineering: selection of original component manufacturer with best cost/benefit potential**
- **Design support: local redesigns or low-cost designs with the help of our preferred range.**
- **Sampling: fast service for procuring samples and fast prototyping**

Design-for-Security (DFS)

Recommendations for assembly design to comply with current security requirements:

- **Software encryption**
- **Project defragmentation (splitting across different production sites and project teams)**
- **General physical security at the production site (access controle, protection against intruders, cyber security)**
- **Patents**
- **Traceability**

Design-for-Logistics (DFL)

Involving supply chain management (SCM) at an early stage ensures optimal throughput times and security of supply, tailored to individual customer needs.

- **Optimal PCB size (benefit) & economical batch sizes**
- **Security of supply through obsolescence management**
- **Forecast data linked to suppliers (back-2-back)**
- **Optimised packaging for sustainable and low-cost transport**
- **Optimised labelling concept and label design to ensure traceability**
- **Standardisation (components, modules, production & logistics processes)**

The hardware of the digital world

From ambition to real products

A unique customer perspective
GPV is committed to ensuring that our customers accomplish more. We do this by building strong and trusting partnerships based on responsible and honest cooperation.

We acquire comprehensive insights into our customers' needs and industries, and we manage advanced and stable product processing, relying on our strong technological knowledge.

Stable. Specialised. Global.
In everything we do, we focus on creating value for our customers, and our approach is supported by the strong spirit of our organisation. As such, we always strive for a timely delivery of faultless, secure and functional products and services that fulfil the expectations and requirements of our customers.

› gpv-group.com

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