

Advanced Product Quality Planning (APQP)

Automotive &
Semi-conductor products












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Cooperation results
Customer & supplier

Overview

Presentation – Outline

(30 min)

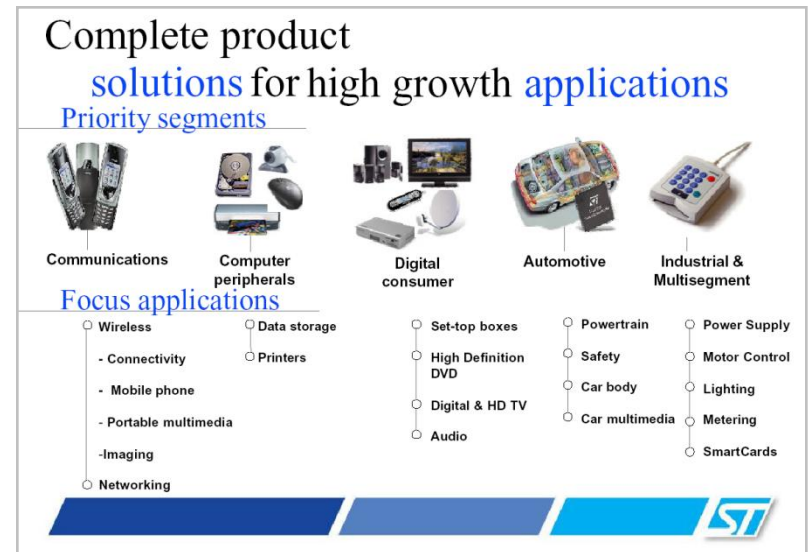
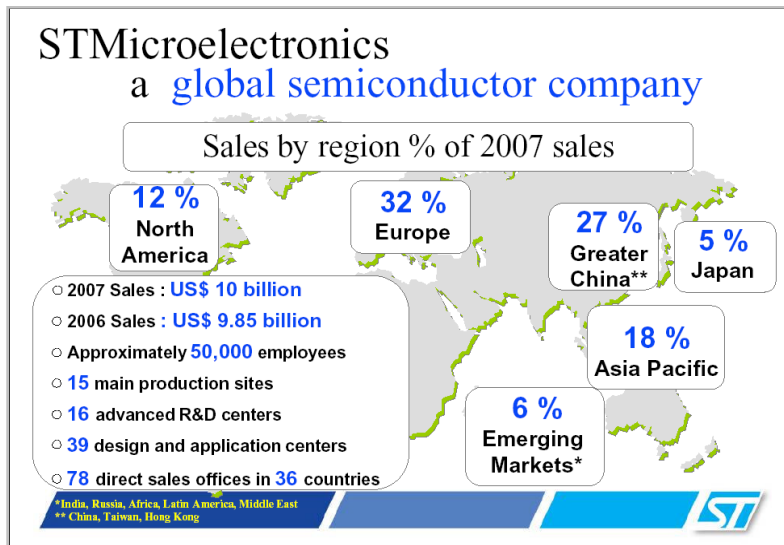
-  **STMicroelectronics – short company profile**
-  **APQP - Principles**
(*APQP = Advanced Product Quality Planning*)
-  **Quality vs. Business vs. Communication**
-  **Business model & Liability**
-  **Tool positioning**
-  **Example, screen shot**
-  **Business model**
-  **Tool performance**
-  **Questions & Answers**

STMicroelectronics – Short company profile

Some key data (basis: year 2007)...

#5 of semi-conductor companies, 10 Billion US\$ Revenue

Broad range supplier



STMicroelectronics – Short company profile

Additional highlights

- High focus on Automotive (15% of revenues)
- Several certifications (ISO/TS16949, ISO14001, ...)
- Different awards, Quality, Environment, ...

STMicroelectronics Awards

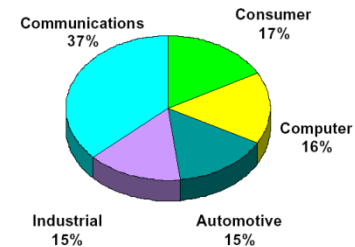


ST has received more than **100** awards and accolades worldwide, in the areas of both Quality and Environmental Protection, including the European Quality Award and the Malcolm Baldrige National Quality Award



Balanced sales in the major market segments

ST 2007 sales
100%=US\$ 10 billion



Sources: ST



Some personal Information

2 min. introduction about myself...

to explain also the focus of evaluation which is shown afterwards

 Since 12 years at ST - Automotive Business Unit / Division

 *Different positions in*


 Technical Sales & Marketing


 Project management, Foundry, ASICs, Micro-controller with eFlash

 *(Customer oriented)* Program management, Quality (*PPAP, APQP, ...*)

 *Actually*

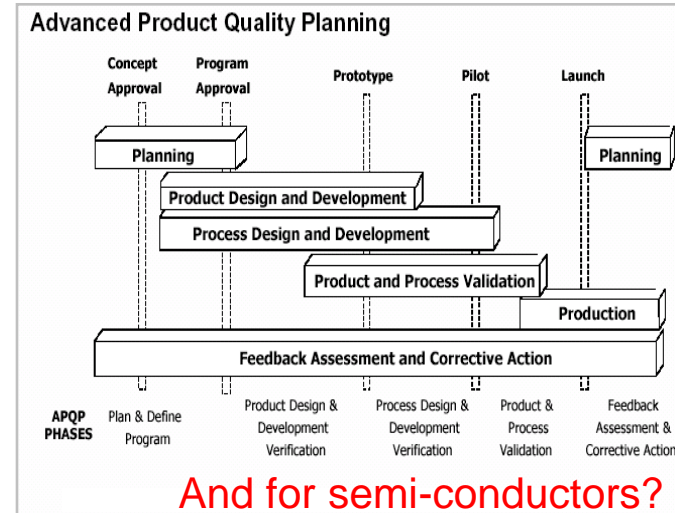
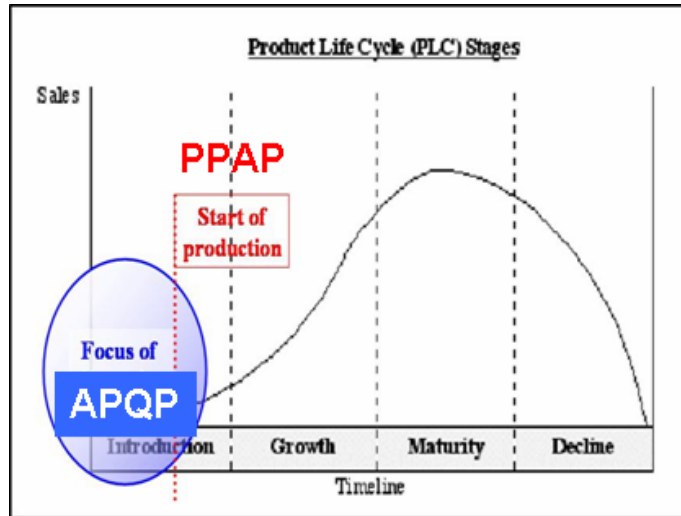
 Customer Requirements Management (*Contracts, Agreements, ...*)

 Project management, micro-controller cooperation
between ST and another well known semi-conductor company

 Internal certified trainer for different courses regarding
project management and product development

APQP – Principles

AIAG (Automotive Industry Action Group) – “Standards”








Common result

- we need fine tuning for semi-conductors
(“standard” comes originally from a “mechanical world”)
- we need different „APQP levels“ for ASSPs & ASICs or uC with eFlash
(added value vs. follow-up = costs)
- final result from APQP has to be also the major input for PPAP
(Production Part Approval Process)

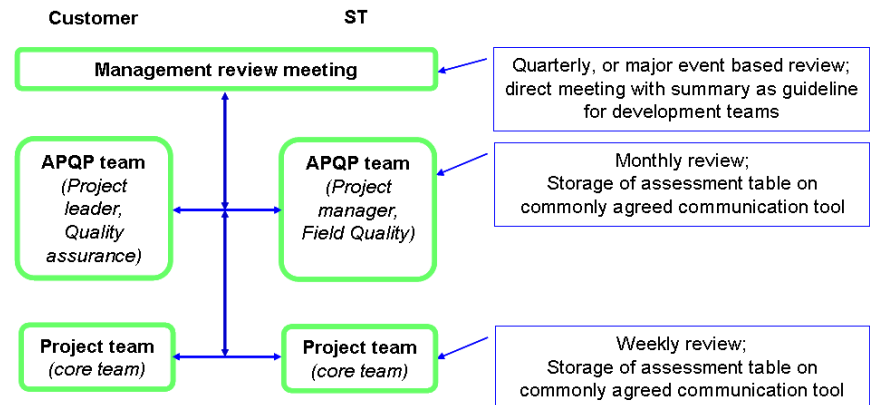
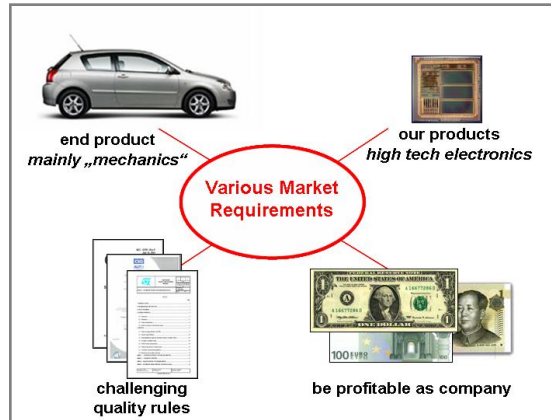
Business model & Liability

Common understanding...

-  **Long term business relationship is the target of both companies**
(basic business rule for Automotive....)
-  **Customer & Supplier have to work together to have success**
(ASICs, high temperature application, safety, ...)
-  **Data will be entered basing on „best known“ status**
-  **No legal liability paragraphs or direct data to control production**
(innovation and good communication & spirit has high priority)
-  **Early warnings is in place**
(regular project team and management reviews)

Quality vs. Business vs. Communication

Who is involved...?



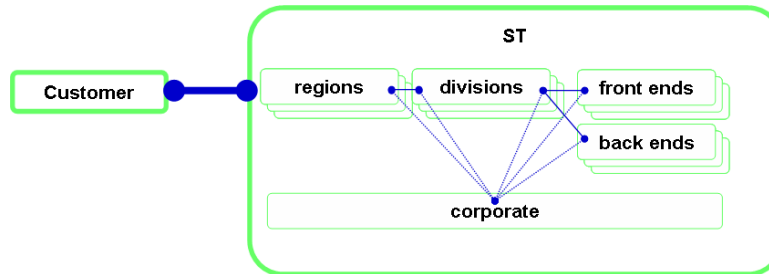
Common result:

- added value for both companies
(project confidence vs. work effort = costs)
- Risk evaluation matrix needs to be reasonable
(electronics vs. mechanics)
- Risks have to be understandable and must be expressed clearly
(design vs. marketing vs. ...)
- Constructive interaction & communication
(more than just pure “checklist” follow-up)
- Outputs needs integration in the review process

Tool positioning

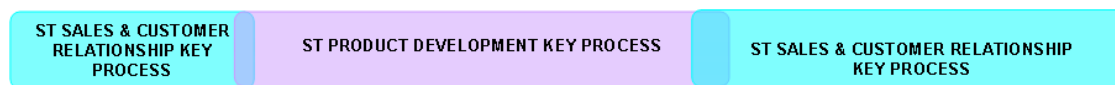
Tool positioning vs. Development process

„Supply-chain of information“
for Quality & project management vs. internal processes



Tool positioning vs. development process & other tools

Management Reviews	New Product Request	Design Approval Certificate	Product Quality Certificate				
Maturity Level	0	10	20/21	29/30	50	60	90



Business model

Business model – Proposal for improvement

Semi-conductor related key items

Evaluation matrix defined by customer can still be improved

Future trends

AIAG gives some good guidelines, but we need more! (*SW, application*)

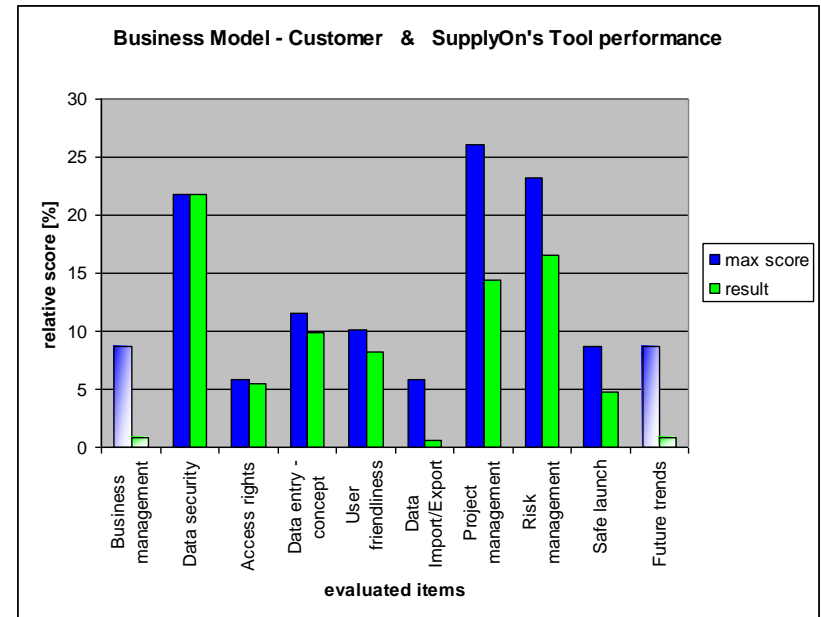
Safe launch

there are more than just technical risks...

Introduce more link of APQP vs. PPAP in internal working procedures (*development – production release*)

Data storage

15 years data storage

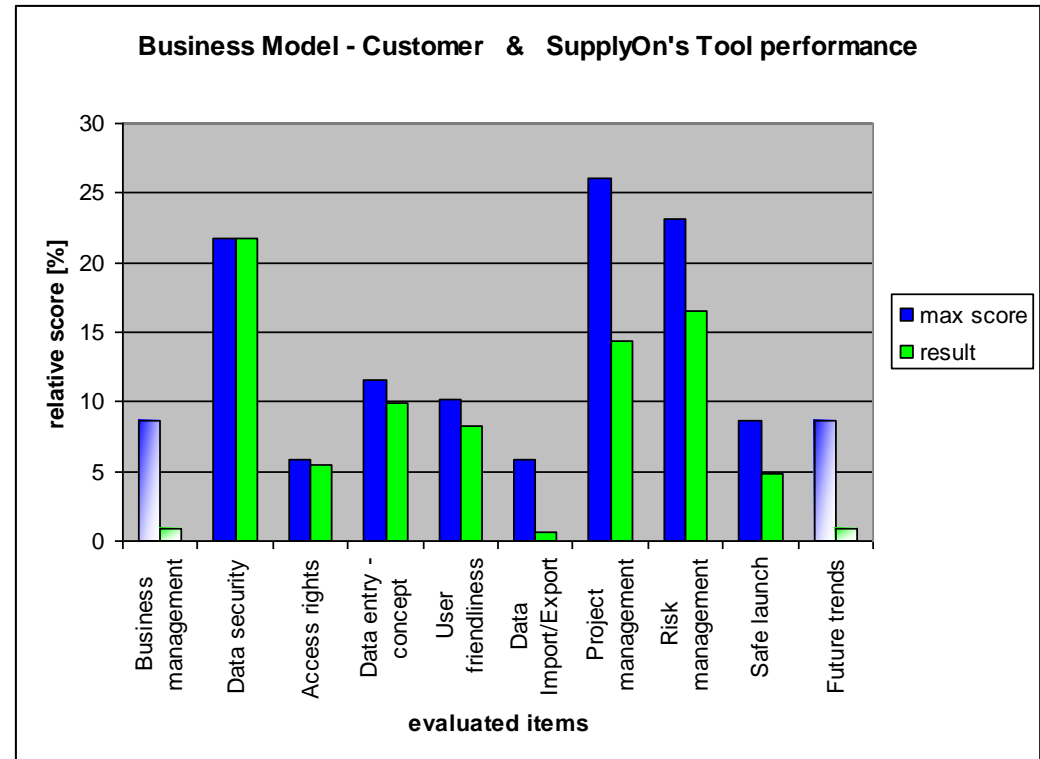


There was and is a very constructive spirit between our customer and ST to discuss very openly results and needs from both side! Thank you for that!

Tool performance

Tool evaluation – Positive items

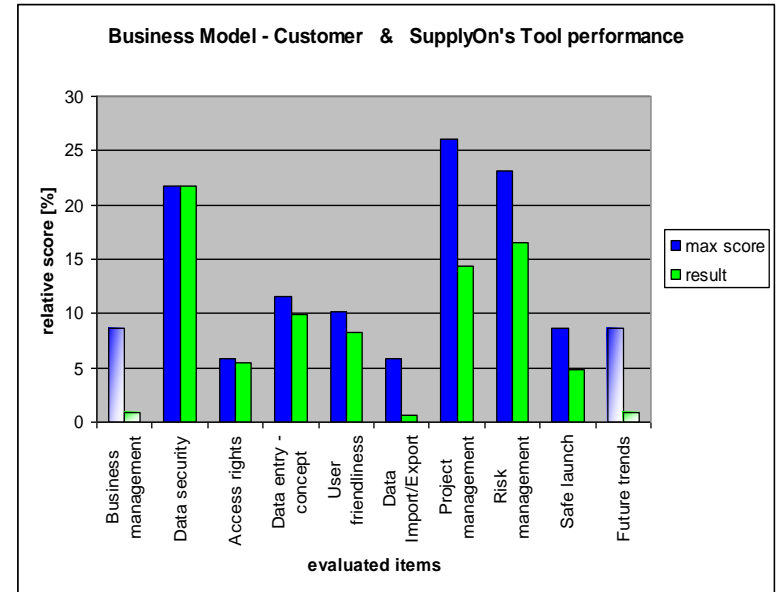
- secure
- fast & user friendly tool
- clear status overview
- supports interaction between Customer & supplier



Tool performance

Tool – some proposals for the future

- Project management
introduction of action follow-up
- Risk management
should include a weighting of items
(can also be a „generic“ Project FMEA)
- Data export
very limited for supplier
(download of a snap shot)
- Data storage/format
how to ensure data access in some years?



We are confident that with a fair effort (=costs) also these items can be improved to provide a suitable and state-of-the-art solution.

Attention: We have to consider the Tool & Business model together