

Watch Business 3D Systems and Styling Design Innovation

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Designer (Styling)

Watch Design Group

Seiko Epson Corporation

Premium Partners



Microsoft

Agenda

- 1. About Seiko Epson**
- 2. 3D Systems for Watch Business**
- 3. Watch Design Process Innovations**

Epson's Core Technology

Roots

Since 1942

- ✦ Mechanical watch

1964

- Tokyo Olympics
- ✦ Crystal meter
 - ✦ Printing timer

Growth

1968

- ✦ Mini printer

1969

- ✦ Analog quartz watch

1973

- ✦ LCD digital watch

Watch Devices

- ✦ CMOS LSI
- ✦ LCD
- ✦ Crystal oscillator

World firsts

NOV, 2004

Corporate Innovative Recognition Award from "IEEE".

The company was cited for its leadership in pioneering development of watches based on quartz crystal oscillators and for the resulting contributions to energy saving technologies in the electronics industry.

Color Imaging

Information Related

- Micro piezo print heads
- Digital color image processing
- DURABrite ink
- High-temperature polysilicon TFT panels for 3LCD projectors

Energy Saving

Electronic Devices

- Low-power CMOS LSI
- Low-power LCD Module
- Low-power full-color MD-TFD
- Photo etching milling technology
- High-frequency SAW technology

Micro-mechatronic

Precision

- "Saving" technology
- High-precision milling
- Surface mount technology
- High-precision implementation
- Digital control technology

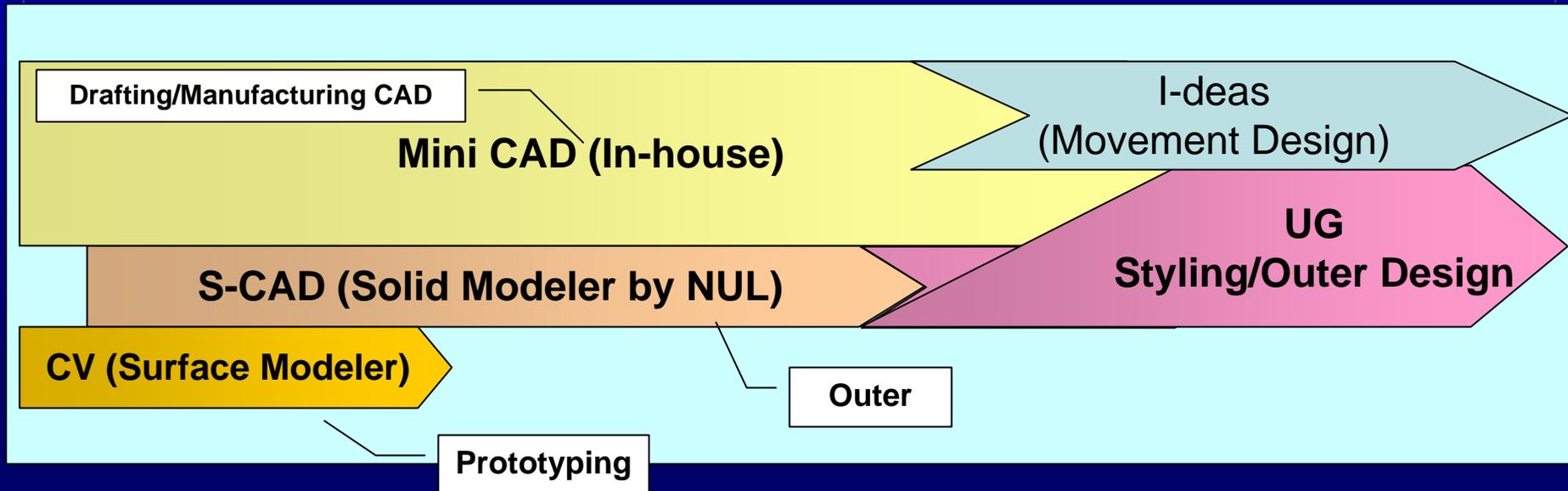
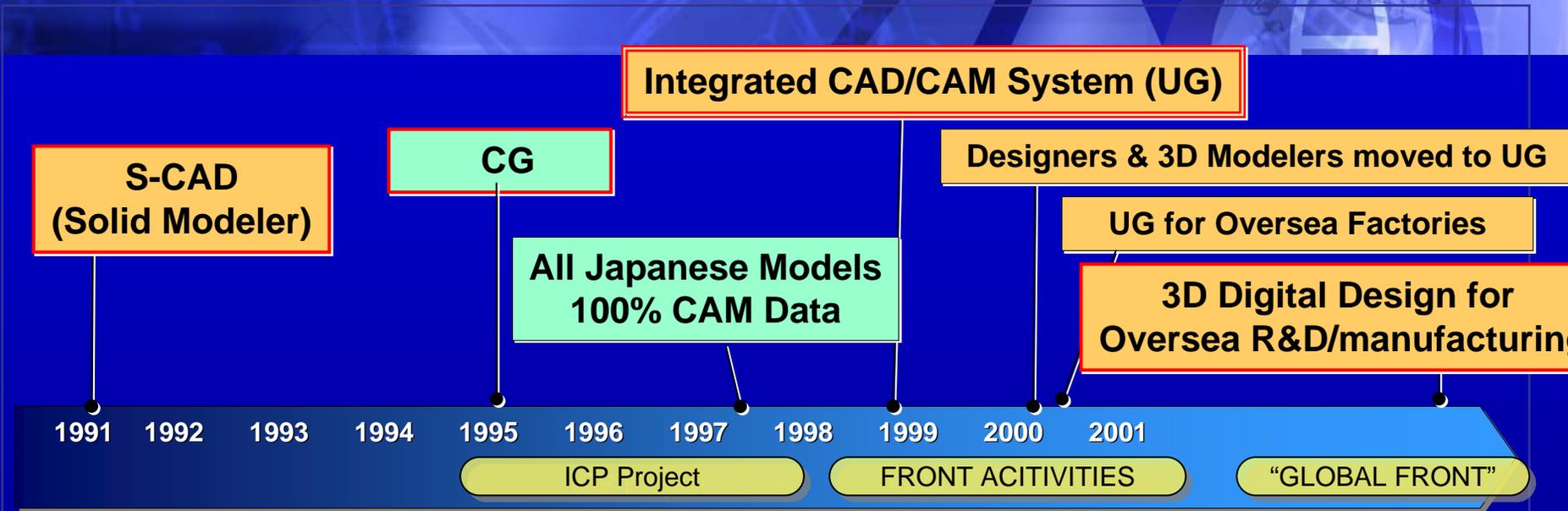
2. 3D Systems Watch Business

Watch Business 3D Systems Establishment



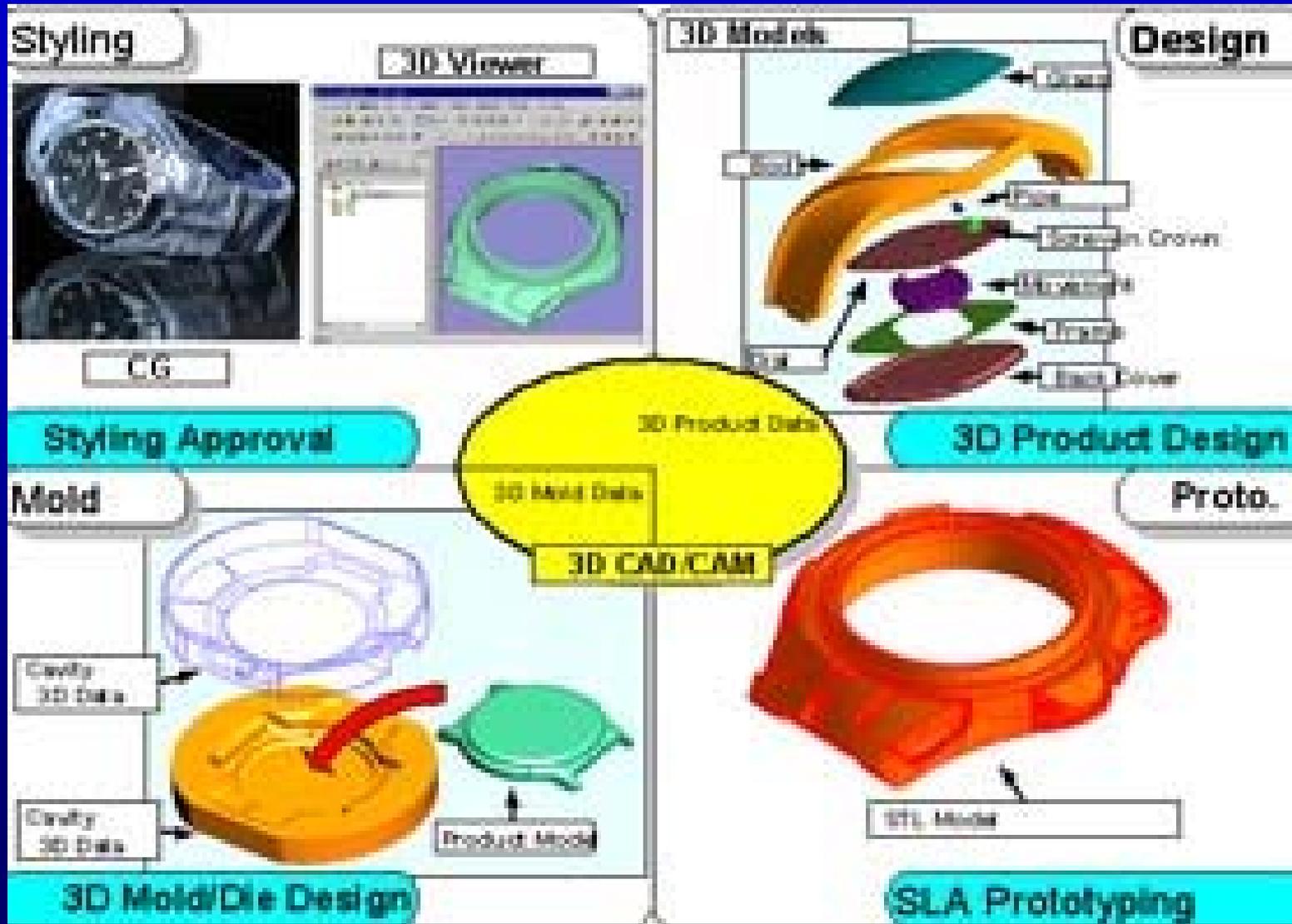
3D CAD/CAM
Total Product Information System
Globalization and Front-End

3D CAD/CAM Business for Watch Business



Digital Engineering for Watch Outer

Key Technologies: 3D CAD, CG, CAM, RP, PDM, Simulation



3. Watch Design Process Innovations

-Innovations-

**Quick Virtual Development Process (QVDP)
Establishment and Operation**

3.1 Design Environment

SEIKO EPSON

(Design/Supply–Manufacturing/Movement Dev.)



SEIKO WATCH

(Planning/Design/Sales/After Service)



3.2 Prior Work Situation and Problems

---Problems---

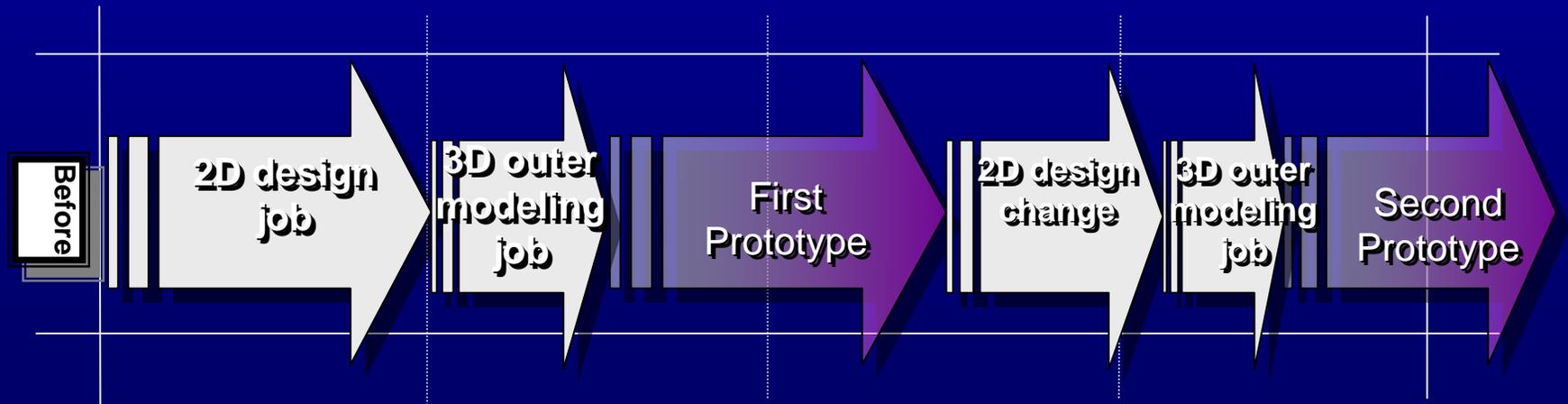
Slow

Expensive

Difficult to improve styling quality

3D systems not used at design divisions

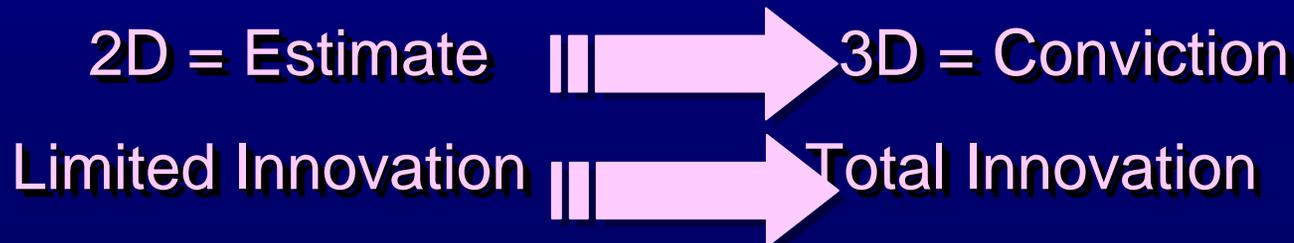
--- Serial Development ---



3.3 Innovation Goal

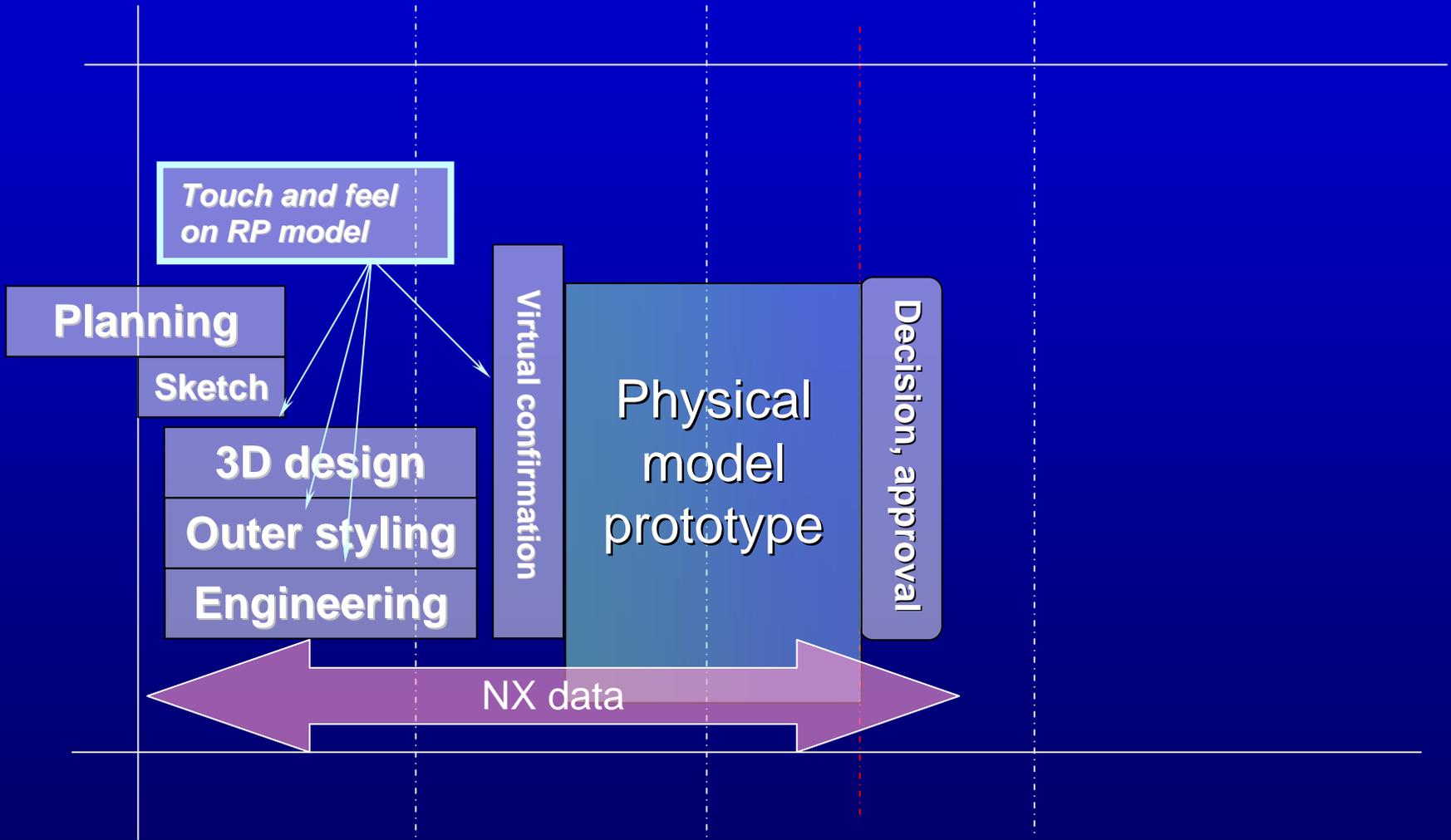
"Better, faster, cheaper products"

- **Use NX as the common 3D language, share 3D information with all processes, and shorten development times.**
- **Use 3D_Virtual_Simulation to minimize prototypes and increase product quality.**
- **Shorten the distance and time between product and market by communicating with 3D content.**
- **Reduce development costs (prototyping and fixed cost)**

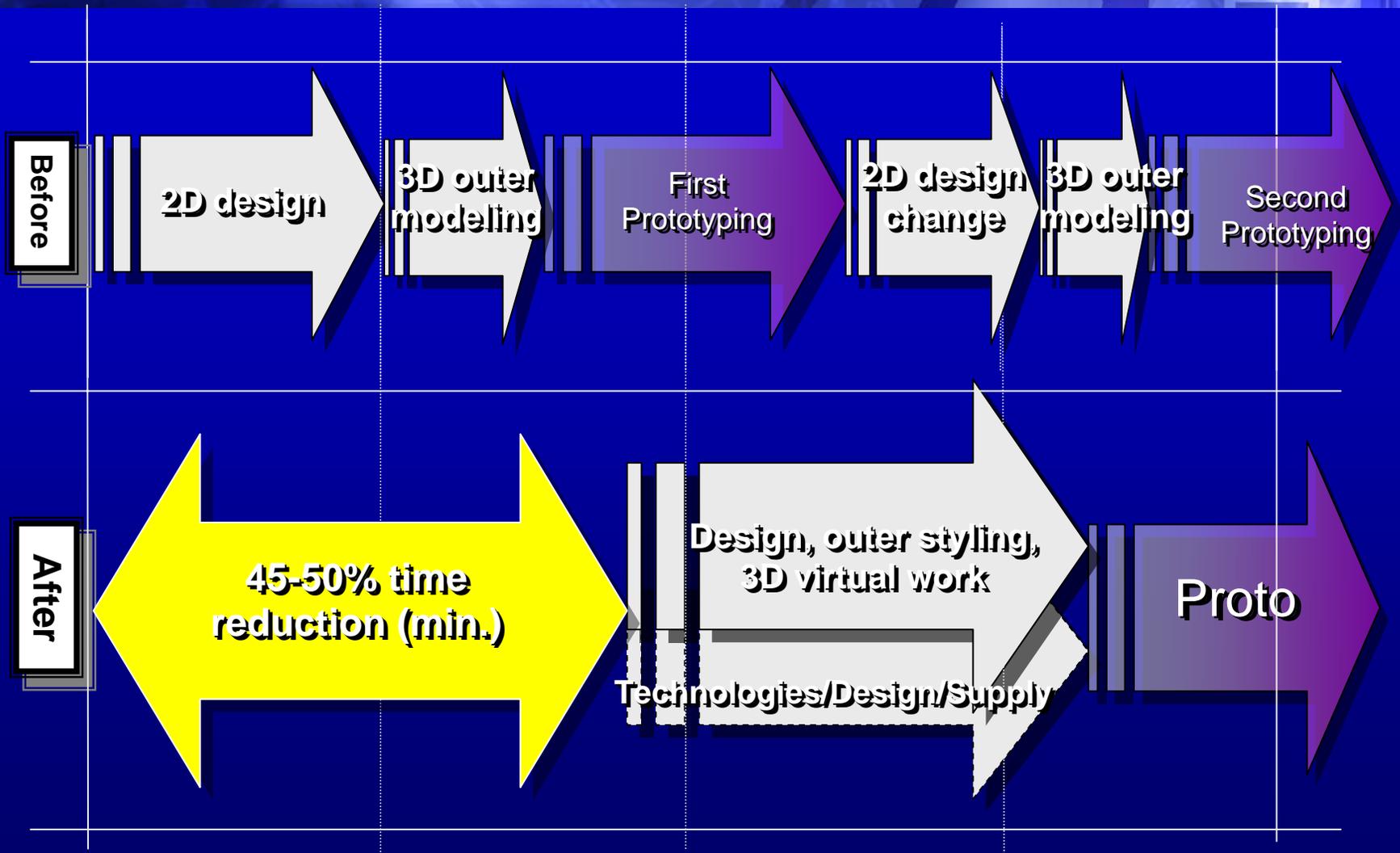


3.4 Innovation Plan

From "serial" to "parallel"



3.5 Innovation Plan



3.6 *TO DO* Items in Styling Design Process

QVDP

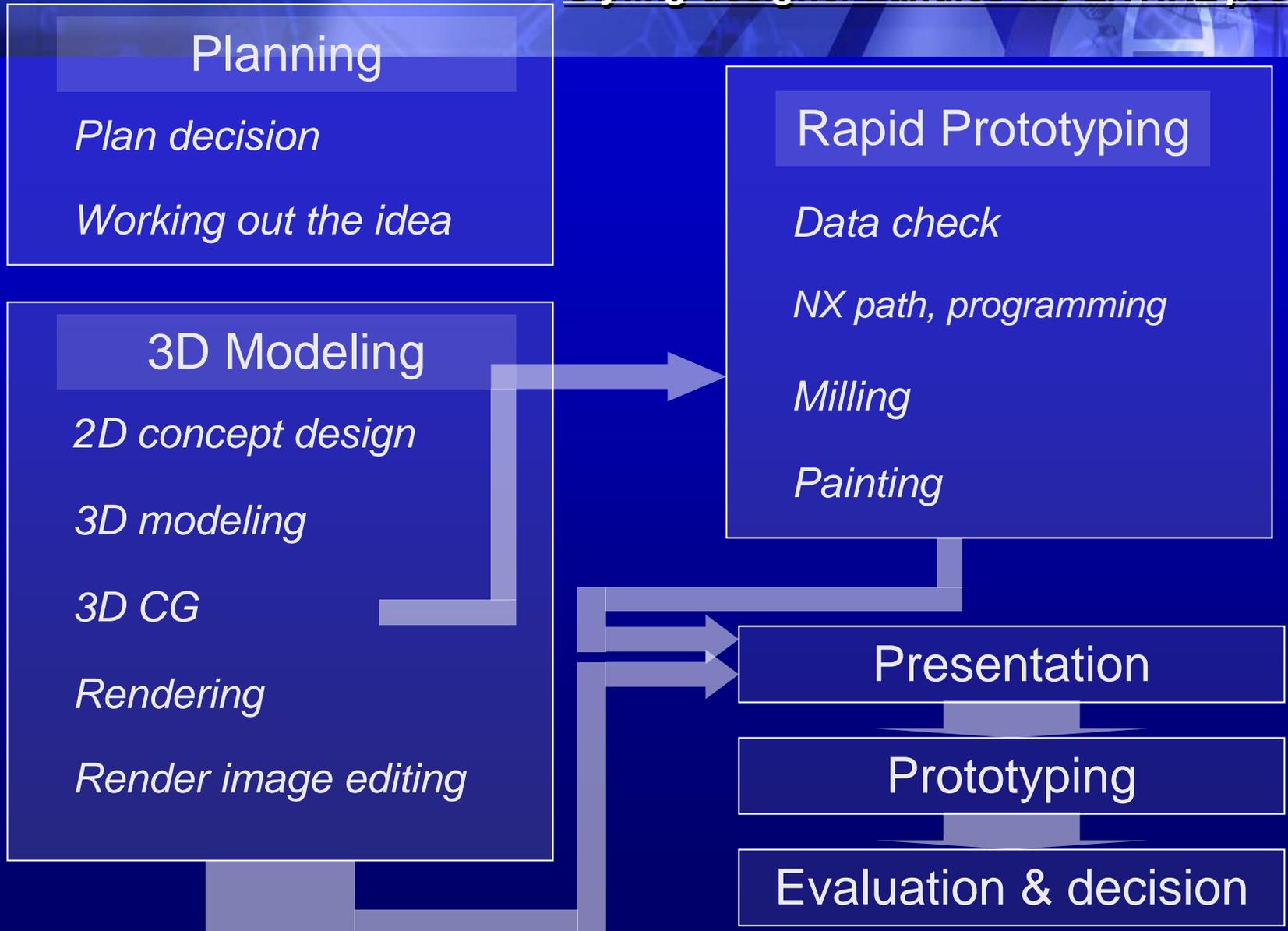
QUICK VIRTUAL DEVELOPMENT PROCESS

Intended to convey styling concepts directly to the market

Relies on NX 3D data to speedily reproduce a high-quality 3D model of the final product that reflects the stylist's sense and technical details. It should be high quality, speedy.

QVDP Process

Styling designer handles the ENTIRE process



Key Points in QVDP

2D Design



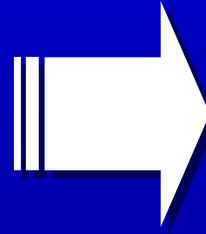
3D Design



RP

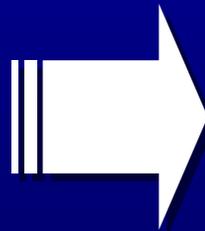


Use the Models



Before

**QVDP
HANDLED
BY ONE PERSON!**



Sketch

3D Design

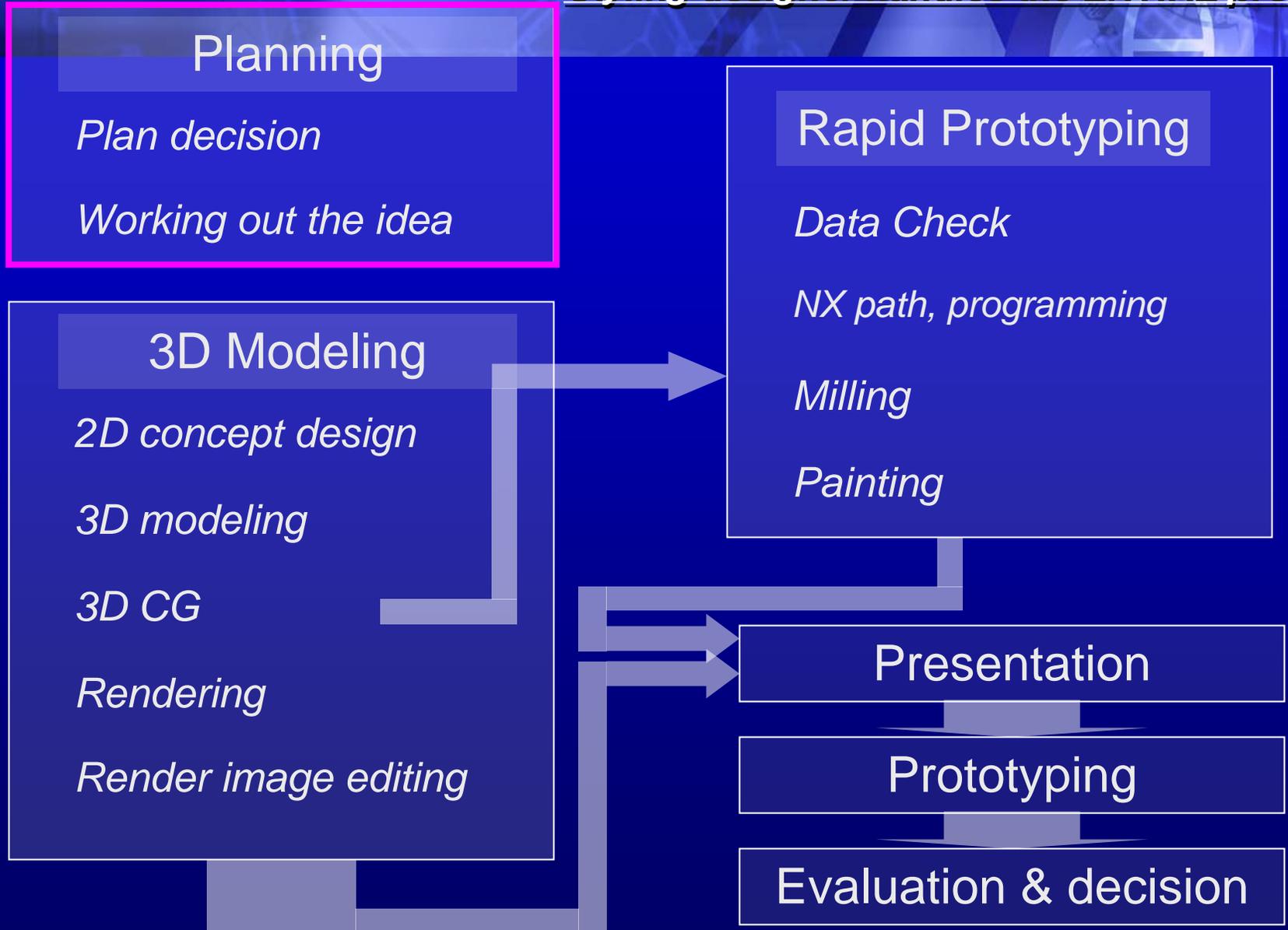


Use the Models

RP

QVDP Process

Styling designer handles the ENTIRE process



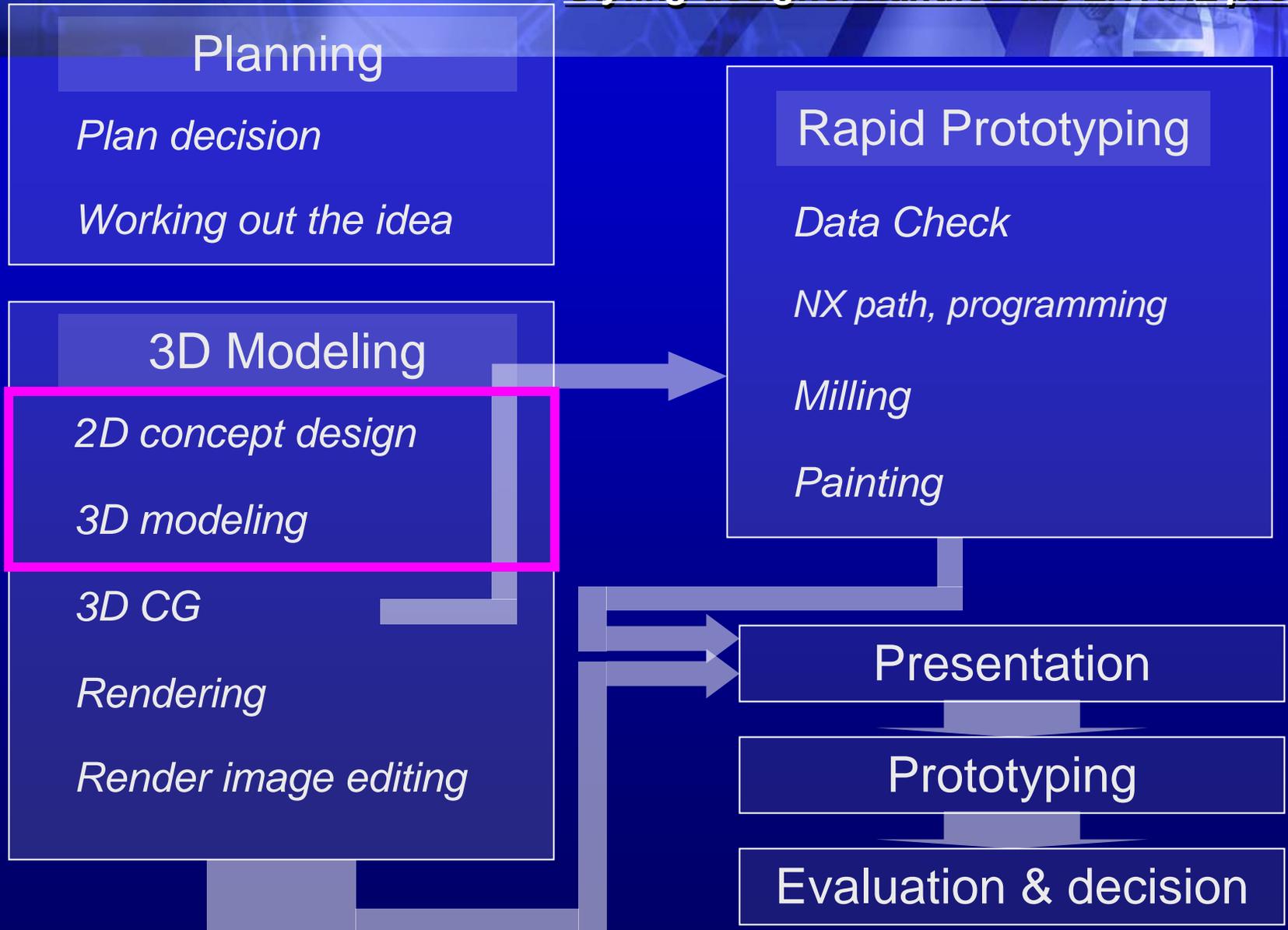
Working Out Ideas

This process has a big influence on the 3D modeling process

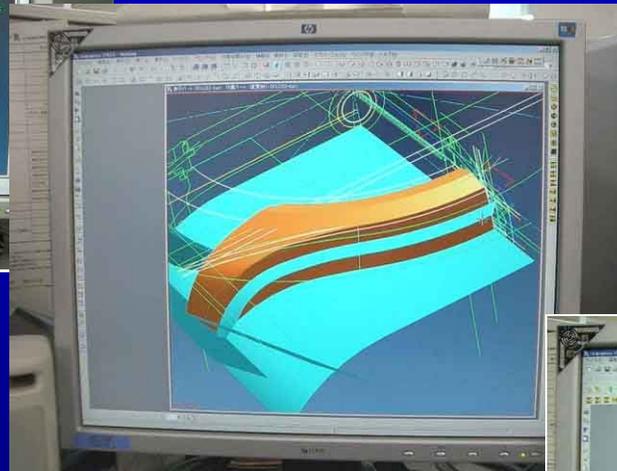
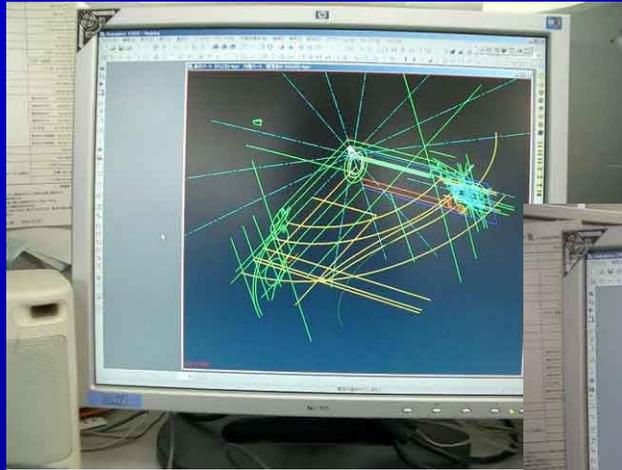


QVDP Process

Styling designer handles the ENTIRE process



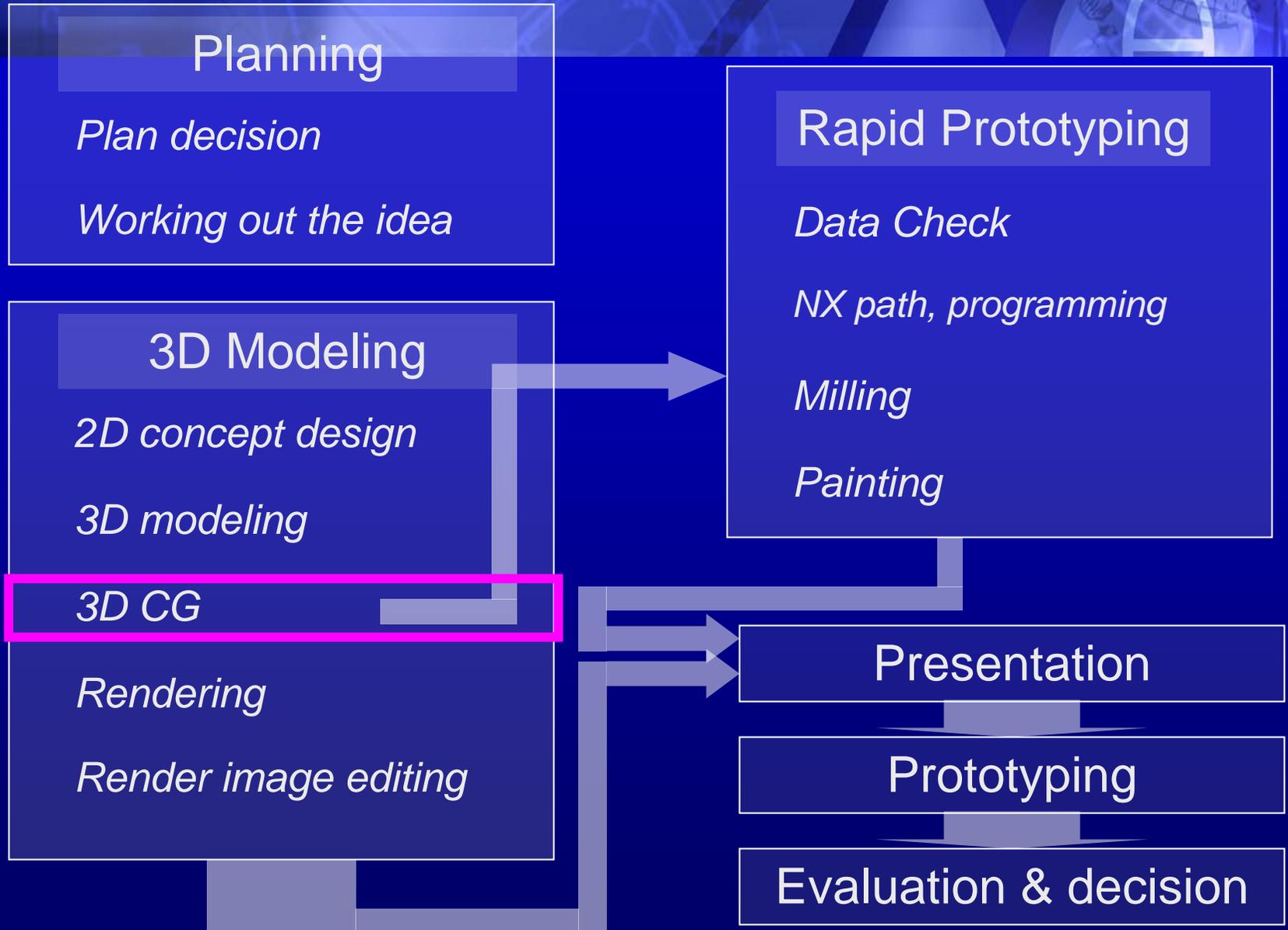
3D Design



- Create faces or solid parts based on defined curves
- Major Influence on basic mechanical quality
- Give consideration to total balance. Repetition for completing.

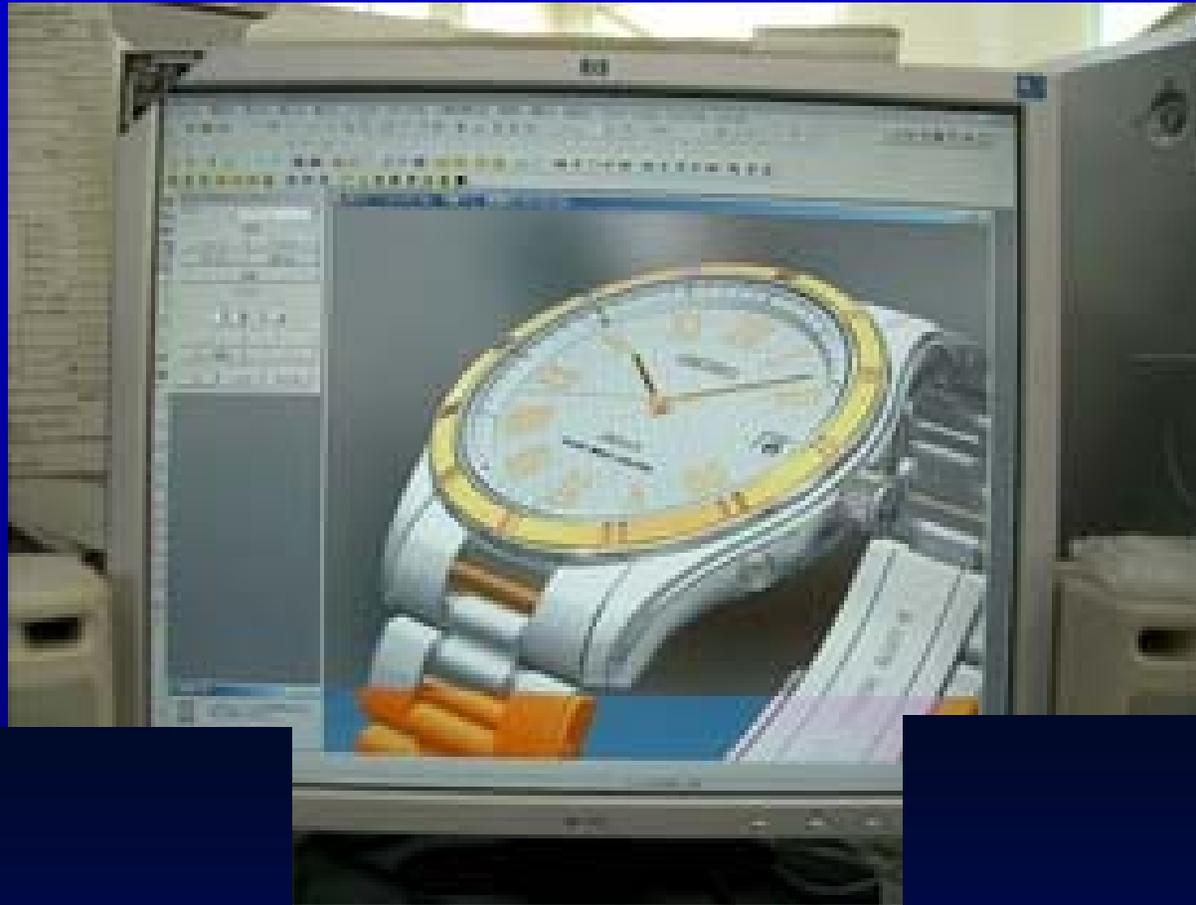
QVDP Process

Styling designer handles the ENTIRE process



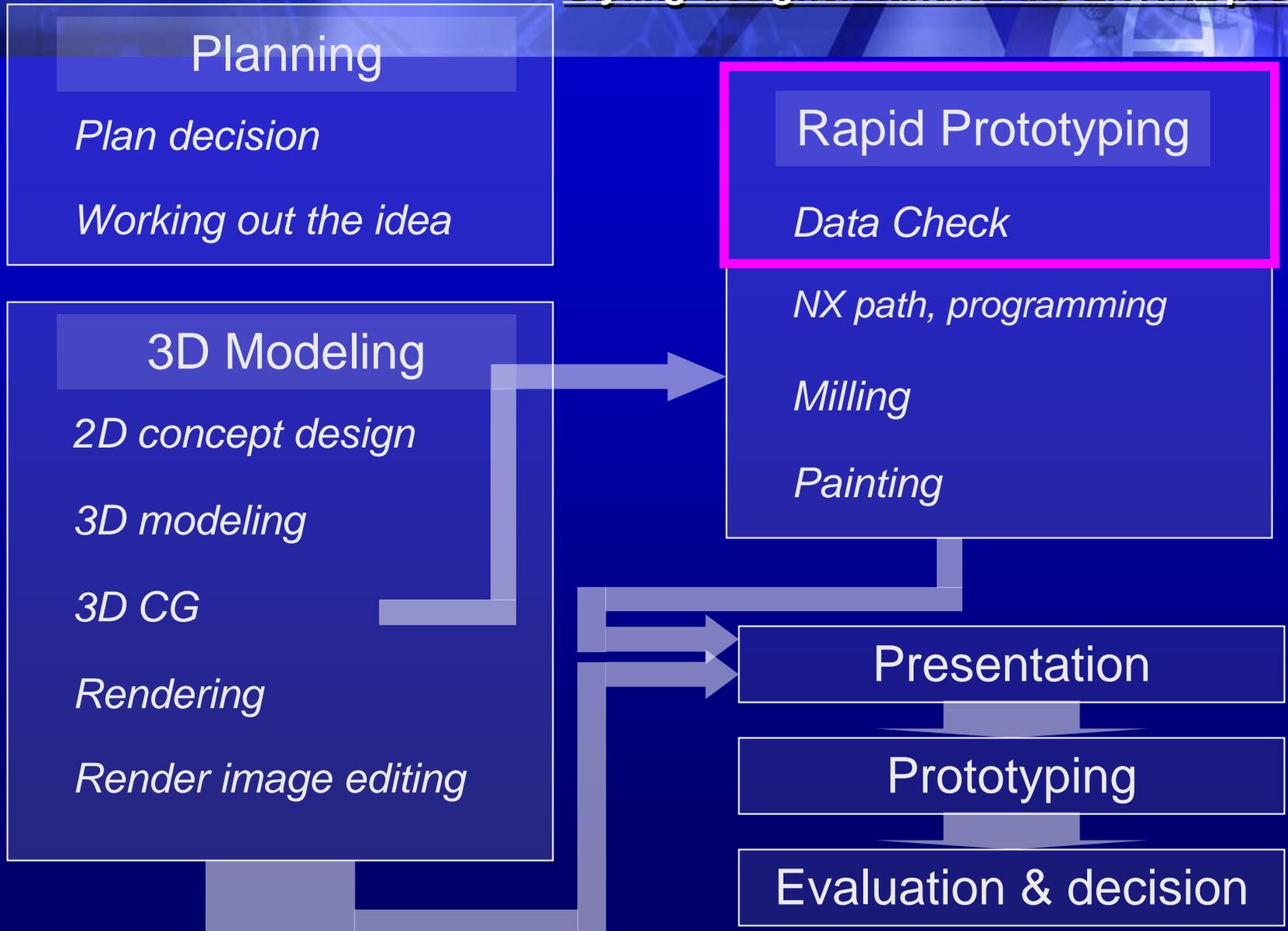
Computer Graphics

- **Material selected for each part. CG created on NX.**

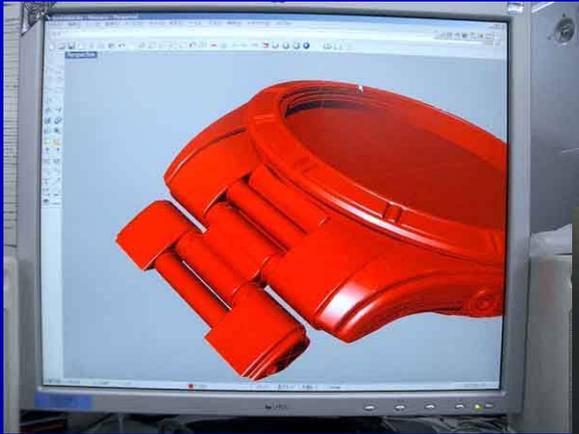


QVDP Process

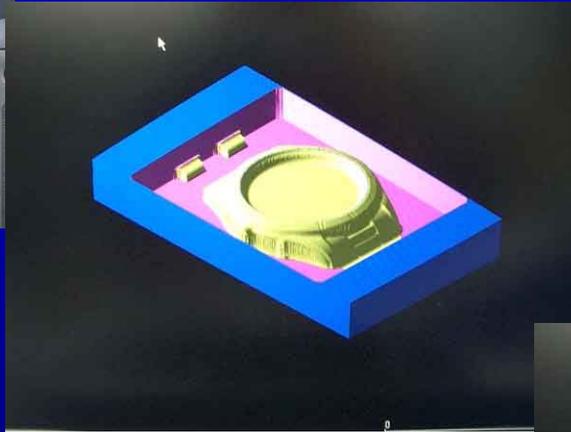
Styling designer handles the ENTIRE process



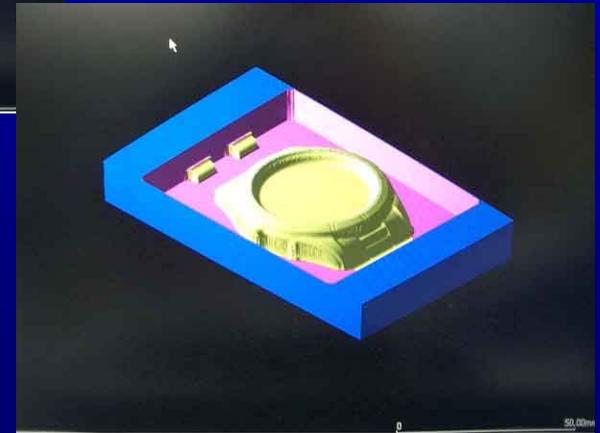
RP Data Creation



Check surfaces



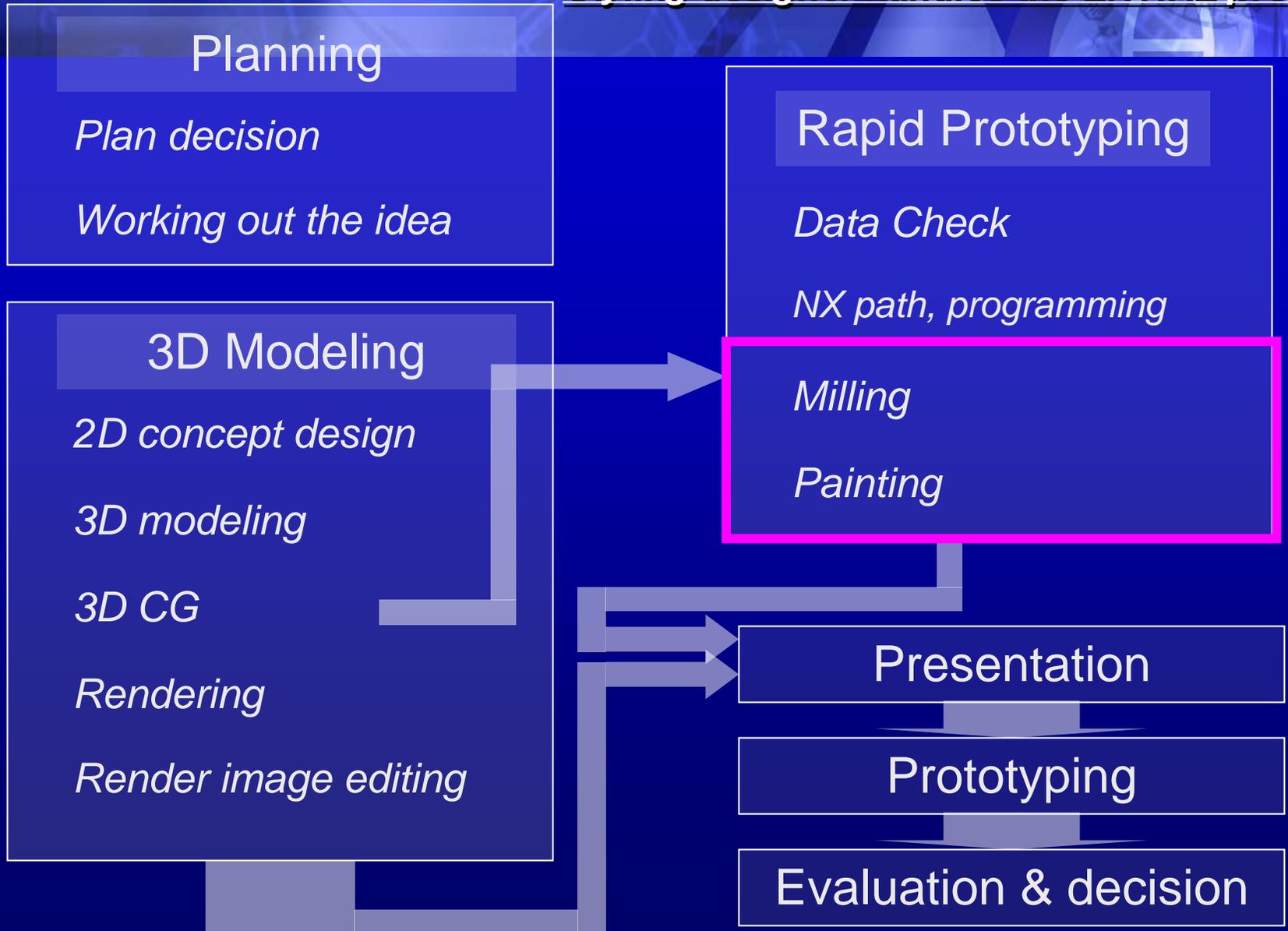
• *Create milling path*



• *Preview*

QVDP Process

Styling designer handles the ENTIRE process

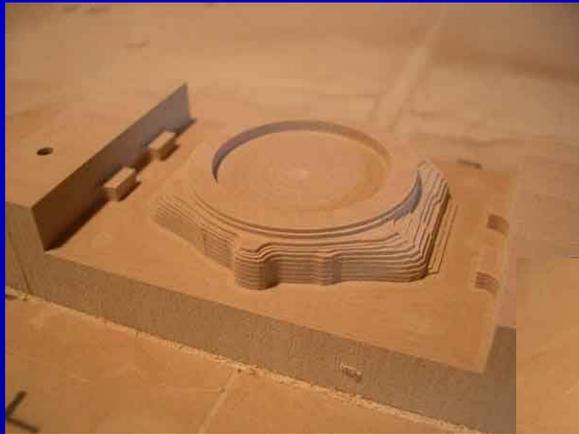


RP Milling



- *Milling data is sent to the machine via a PC printer port.*

Milled Chemical Wood



• *Rough milled*



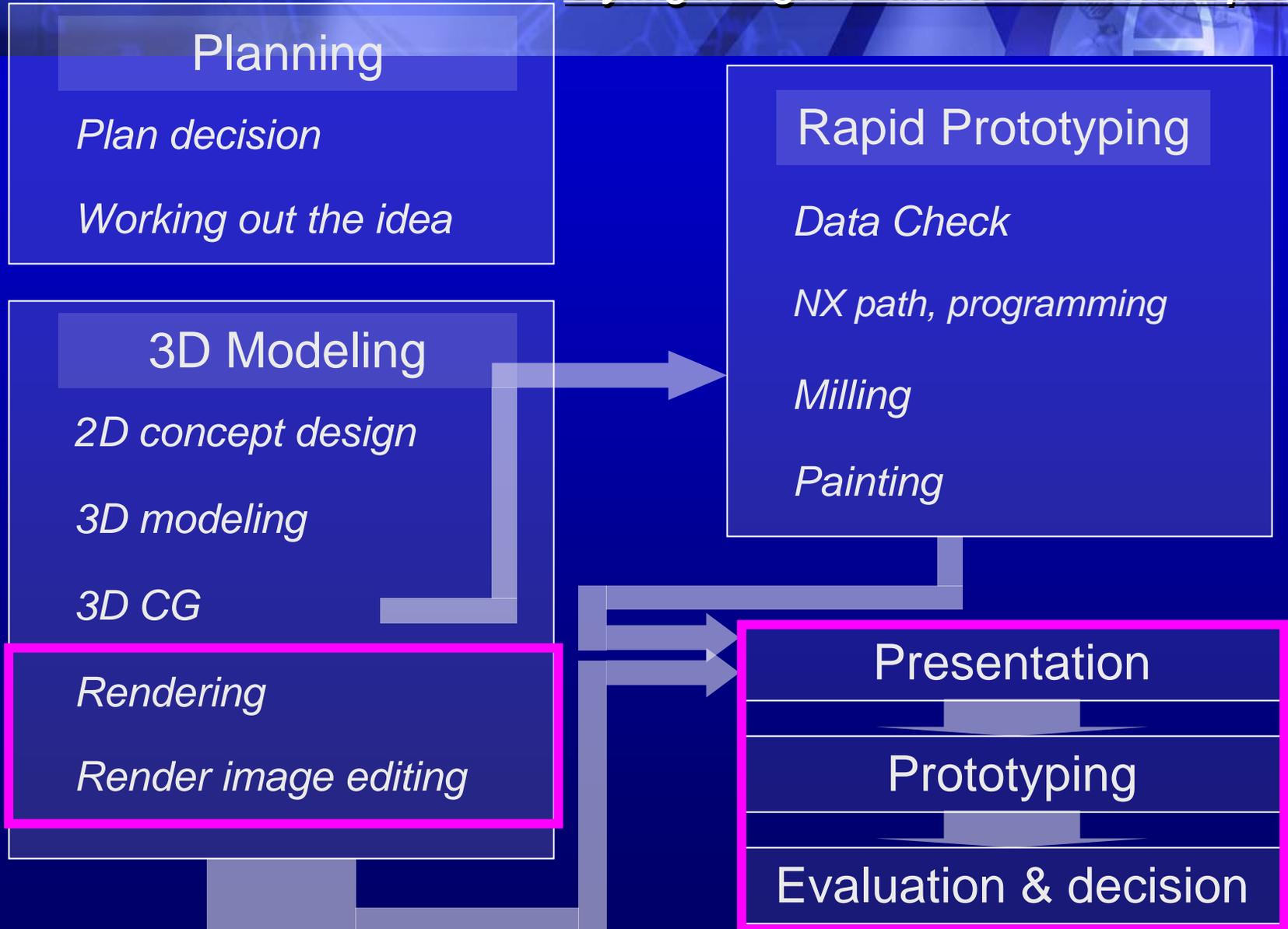
• *Semi-finished*



• *Finished and painted, front & back*

QVDP Process

Styling designer handles the ENTIRE process



Rendering and Prototype

- Final evaluation using renderings and rapid prototype



QVDP Time

Styling designer handles the *ENTIRE* process



QVDP Results

Efficiency

Speed was increased by at least 50%

Quality was increased by a minimum of 100%

Smooth communication and sharing of issues enterprise-wide

QVDP

Cost

Reduced prototyping, labor & travel expenses by 50% or more

Contents Use

Increased presentation quality.

Nice sales materials.

Virtual data used at sales sites

Leaflets & promotion videos

Contents Use

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What we stylists need to do today

***Advances in 3D software are putting
3D representation capability
in the hands of many***



***Stylists have to master 3D software and
realize sophisticated creative jobs quickly.***

Thank You