THINK INSPIRE CREATE

Developing Tomorrow's Technology Today

Advanced Solutions Nederland
Corporate overview, competencies, workflow and successes
(ASN09-PPT002)

Who We Are

- Started in 2006 in Enschede, the Netherlands by Dr. Sanjeev Sarpal.

- Comprised of international team of experts, specialising in:

  - DSP algorithm development.

  - Mathematical modelling.

  - Analogue & digital hardware circuit design.

  - PCB design.

  - Embedded software.

- Over 50 man years 'in house' knowledge and experience.

- Partners and technical network:

Areas of expertise:
Matlab® algorithm development

Applications Areas:

- Radar tracking filters.

- Control system design.

- Noise cancellation.

- Speech/audio analysis and coding.

- System Identification.

- Non-linear filtering.

Algorithms:

- Kalman filters.

- Kernel filtering.

- $\alpha-\beta-\gamma$ trackers.

- LMS (least mean square).

- LPC (linear predictive coding).

- Cross/auto correlation.

- Spectral estimation (power spectrum).

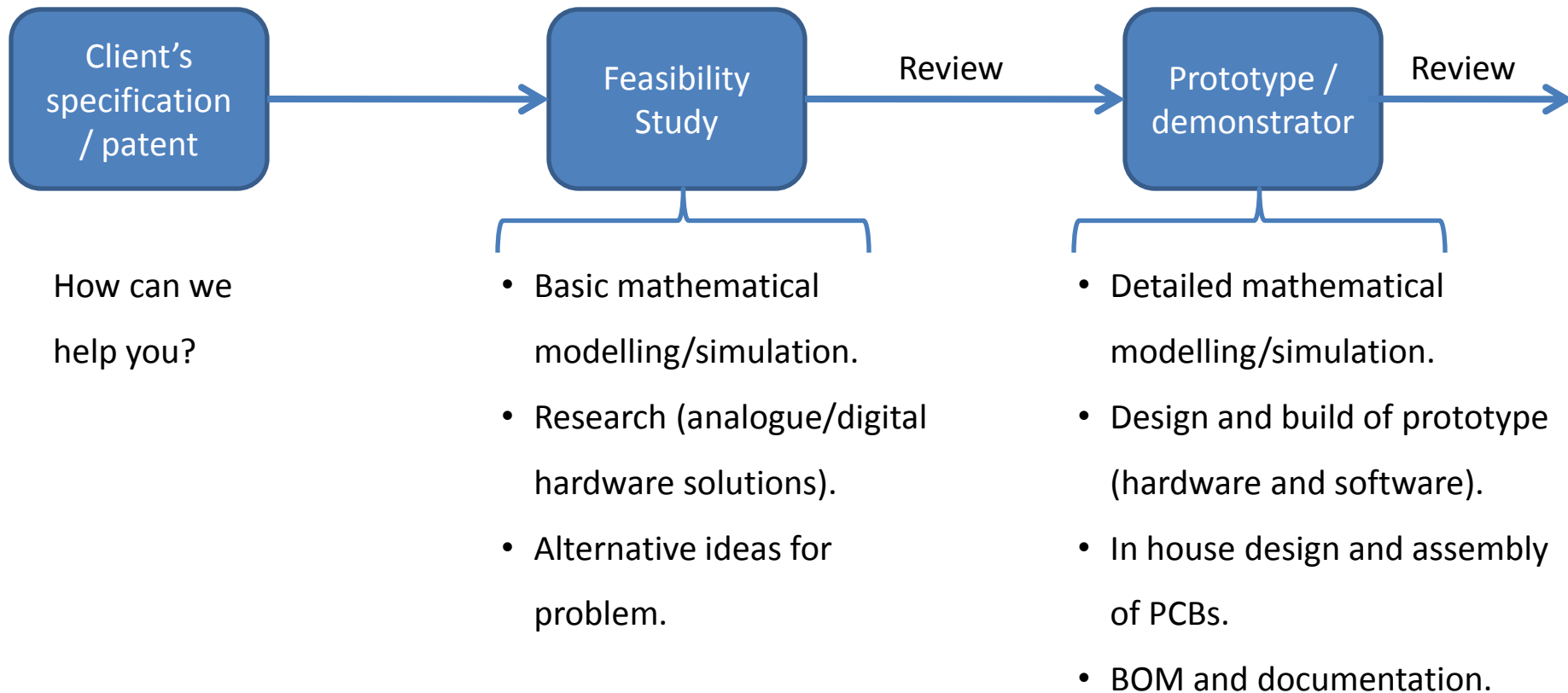- Wiener-Kolmogorov filtering.

Mathworks approved design partner for Matlab® development projects.
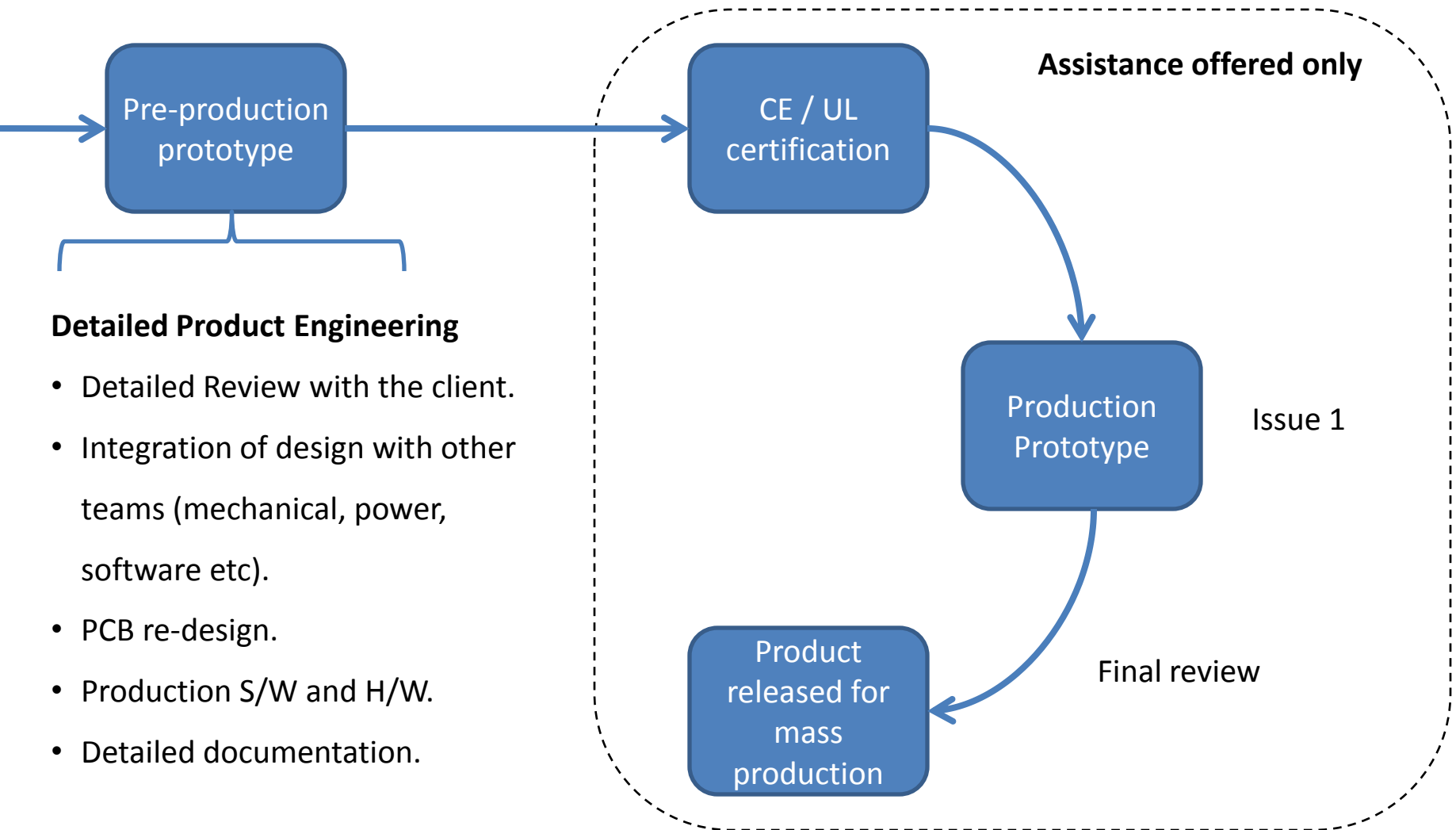
Areas of expertise: Hardware design

- **Analogue electronics**
  - Active filters, VGA/PGAs, instrumentation amplifiers.
  - Bipolar/MOSFET, low power, low noise.
  - EMI filters.
- **Communications**
  - USB, RS232/485, Bluetooth, CANBus, TCP/IP, Zigbee.
- **Digital electronics**
  - DSPs, MCU/MPU.
  - SRAM, Flash, EEPROM.
  - High speed digital.

- **Mixed signal design**
  - ADCs/DACs.
  - mix and match of analogue and digital technologies.
- **PCB design**
  - EMC compliant designs.
  - Leaded and SMT components.
  - multilayer PCBs (assembled in house).
- **Power supplies**
  - Linear.
  - SMPS.

Overview of our work processes

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Client's
specification     →     Feasibility          Review     Prototype /        Review
/ patent                Study          →              →  demonstrator    →         →
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How can we
help you?

- Basic mathematical modelling/simulation.
- Research (analogue/digital hardware solutions).
- Alternative ideas for problem.

- Detailed mathematical modelling/simulation.
- Design and build of prototype (hardware and software).
- In house design and assembly of PCBs.
- BOM and documentation.

Detailed Engineering, certification and mass production

Detailed Product Engineering

- Detailed Review with the client.

- Integration of design with other teams (mechanical, power, software etc).

- PCB re-design.

- Production S/W and H/W.

- Detailed documentation.

Pre-production prototype

CE / UL certification

Assistance offered only

Production Prototype

Issue 1

Product released for mass production

Final review

Success stories by industry

- **Automotive radar**
    - Cruise control.
    - Collision avoidance systems.
    - Speed camera vehicle tracking system.
    - Stochastic signal processing.

- **Consumer electronics**
    - Personal audio.
    - Product design.
    - Smart card readers.
    - Gadgets.

- **Industrial automation**
    - Analogue sensor conditioning.
    - Closed loop controllers.
    - AC/DC drives.
    - Robotics.
    - High precision DAQ systems.
    - Instrumentation.

- **Communications**
    - Wireless audio encryption system.
    - Speech analysis algorithms.