



## A technical story

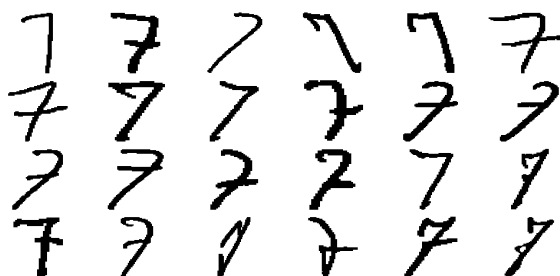
**Our history started in 1967 in the mathematical centre of the Dutch PTT. Our aim was to reduce the manually effort of coding hand-written bank slips (amount and account number fields), that were processed in a centralised way. Issues in pioneering days were hardware related such as control of the transport system, scanning images in an extreme dust-proof way and special hardware for feature extraction.**

In 1993 our HYCR™ technology was first used in a postal application. In cooperation with our client a dotted box was developed. The dotted box was patented and designed in such a way that postal card manufactures could use the standardised postal code without any extra costs. The dotted box could be accurately detected and removed and our expertise of handwritten characters was directly transferred to the postal market and a considerable cost saving was achieved.

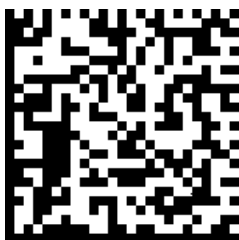
### Character recognition

We became a big player in the field of handwritten character recognition. In 1995 we reduced the error margin in such a dramatic way that we could replace the verification system with a (transputer based) coding system. In a coding system the results of the recognition system are directly fed into the booking computer without any human interference. This was (and still is) a unique cost saving feature. If no additional information is available the error margin of most systems is not acceptable in a banking environment and at least one human coding action is required that is verified afterwards.

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In 2000 we made our first entrance in the traffic market by winning an open competition for number plate recognition for the national road pricing project of the Dutch government. Final requirements included processing more than 6 images per second, an accuracy of more than 99% per image (in the total system the error was further



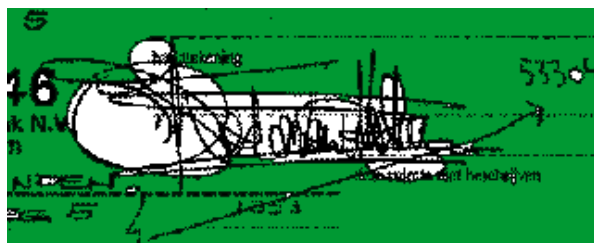
reduced by combining images of front and rear side of the cars). We were selected from 7 competitors based on the measured score and error on a large test set, price and robustness of implementation. Nowadays major improvements have been made. We are currently working with partners in projects for parking lots, route control and detecting dangerous chemical signs on vehicles to make smarter motorways and we did our first work on video processing.



In 2001 we rolled out a small but complete platform using based on a wintel PC to process registered mail based on Form Vision. The platform included scanning devices with a colour line scan camera and a CORBA based coding pool network capable of serving up to 60 video coding places. Here we did our first colour processing to detected several types of coloured stickers. On a daily basis 45.000 registered mail documents are processed with a read rate over 70%.

**Recognised results**

Nowadays our fully scalable ALPHA based recognition systems are connected to the coding pool networks of system integrators. We process per system 10-20 documents per second, on a daily basis still more then 600.000 documents are processed with an uptime of 100%. We code directly without any human intervention more than 70% of numeric free fields with a maximum error margin of 0.03% per field! For self-controlling



fields, such as bank accounts, the return tops 92%. The recognised results are directly transferred to the booking system. We can handle a lot of different forms using landmark detection, detect invalid or special bookings to saving accounts, perform postal code checking etc. We have also developed a signature verification system.

We use address block selection, address databases and reasoning to obtain the postal code and house number of mail pieces and parcels. Additionally we read bar codes, detect priority stickers, detect foreign post etc. We are now world class in the field of handwritten word recognition. In a coding pool we process the reject of a major player in the postal industry and a score over 50% on this reject is obtained. We also support our clients in designing, realisation, maintaining and renewing their world class architectures.

**History**

This is only a short selection of our history, given our recent expansion not all events can be described here. With our mixture of research, development and practical skills we find working solutions. Our main focus is to deliver quality products for our current markets and to make video or image processing problems history.

