



Australian Government

IP Australia

Structured Patents at IP Australia

ST.96 Implementation Journey

Presented by

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Structured Patent Specifications (`SPS') Project

Four streams of work

1a. Publication

- Modernisation of patent publication
- Enhanced OCR with publication process
- Results in XML

1b. Document based data

- “Enhanced OCR” (Optical Character Recognition) stream
- Biggest stream of work and focus of this presentation

2. Bibliographic data

- Challenging due to schema complexity
- Currently base level data based on MVP
- To be expanded in future

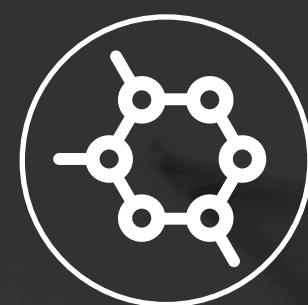
3. Assembly and dissemination

- Combining schema outputs of streams 1-3 into one combined XML file
- Combining this XML file with stored image files and sequence lists
- Packaging for consumption

Enhanced OCR stream



1. Choice of
OCR



2. Chemical
formulas



3. Mathematical
formulas



4. Other elements
of specifications



5. Summary

Enhanced OCR stream



1. Choice of OCR



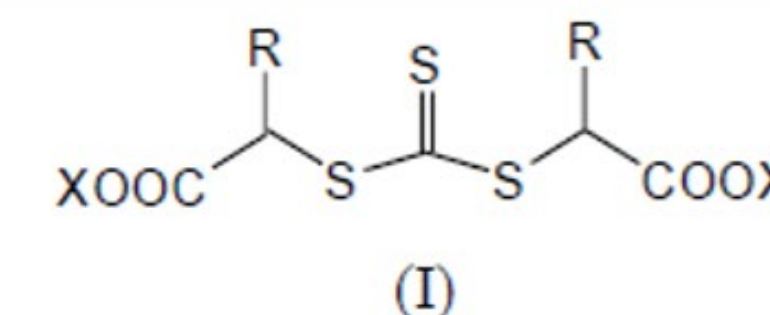
Enhanced OCR stream



2. Chemical formulas

- Defined appearance that differs from text and non-chemical images
- Deep neural network machine learning model
 - Training: IP Australia patent data
 - Accuracy: identification of chem in cropped images (99%) vs embedded in text
- Converting to structured formats not feasible

compound comprising a bisulphite ion, preferably a compound chosen among: bisulphite, an alkaline metal bisulphite, in particular sodium bisulphite, bisulphite, calcium bisulphite, magnesium bisulphite, and combinations thereof. The polymerisation reaction can also be carried out in the presence of from 0.0 weight, relative to the total amount of monomers, of at least one compound chosen from a xanthate derivative, a mercaptan compound and a compound of formula (I):



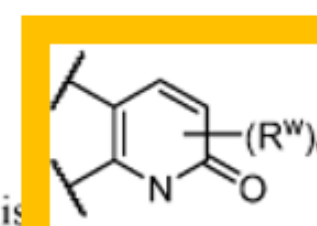
wherein:

- X independently represents H, Na or K and
- R independently represents a C₁-C₅-alkyl group, preferably a methyl group, particularly a compound of formula (I) which is disodic diisopropylidenebisulphite.

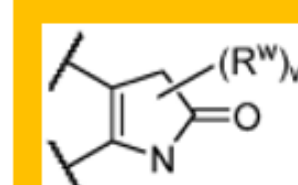
Acco

[0073]

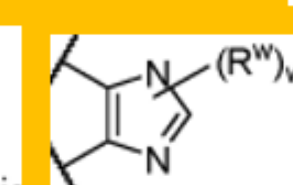
In some embodiments, Ring W is



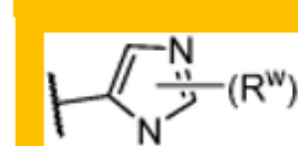
In some embodiments, Ring W is



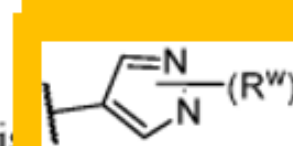
In some embodiments, Ring W is



In some embodiments, Ring W is



In some embodiments, Ring W is



Enhanced OCR stream



3. Mathematical formulas

- Lower confidence than with chemical formulas; appearance more similar to text
- Deep neural network machine learning model
 - Training: public data
 - Accuracy: 92% for inline formulas, 96.7% for standalone formulas
- Converting to structured formats feasible, but not within scope

[0064] NR uses OFDM in the downlink (and OFDM or DFT precoded OFDM in the uplink) and hence the received $N_R \times 1$ vector \mathbf{y}_n for a certain TFRE on subcarrier n (or alternatively data TFRE number n) is thus modeled by

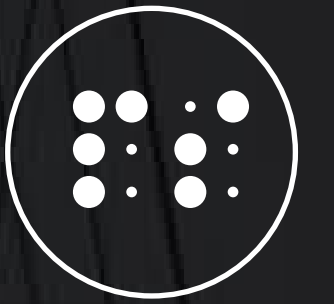
$$\mathbf{y}_n = \mathbf{H}_n \mathbf{W} \mathbf{s}_n + \mathbf{e}_n$$

Equation 1

where \mathbf{e}_n is a noise/interference vector obtained as realizations of a random process. The precoder \mathbf{W} can be a wideband precoder, which is constant over frequency, or frequency selective.

Such antenna arrays may be (partly) described by the horizontal dimension N_h , the number of antenna elements N_v and the number of dimensions corresponding to the polarization N_p . The total number of antennas is thus $N = N_h N_v N_p$. It should be noted that N is non-limiting in the sense that it can refer to any number of physical antenna elements. For example, pairs of antennas may be used to receive the signal, and hence share the same virtualized antenna

Enhanced OCR stream



4. Other elements of specifications

Drawings

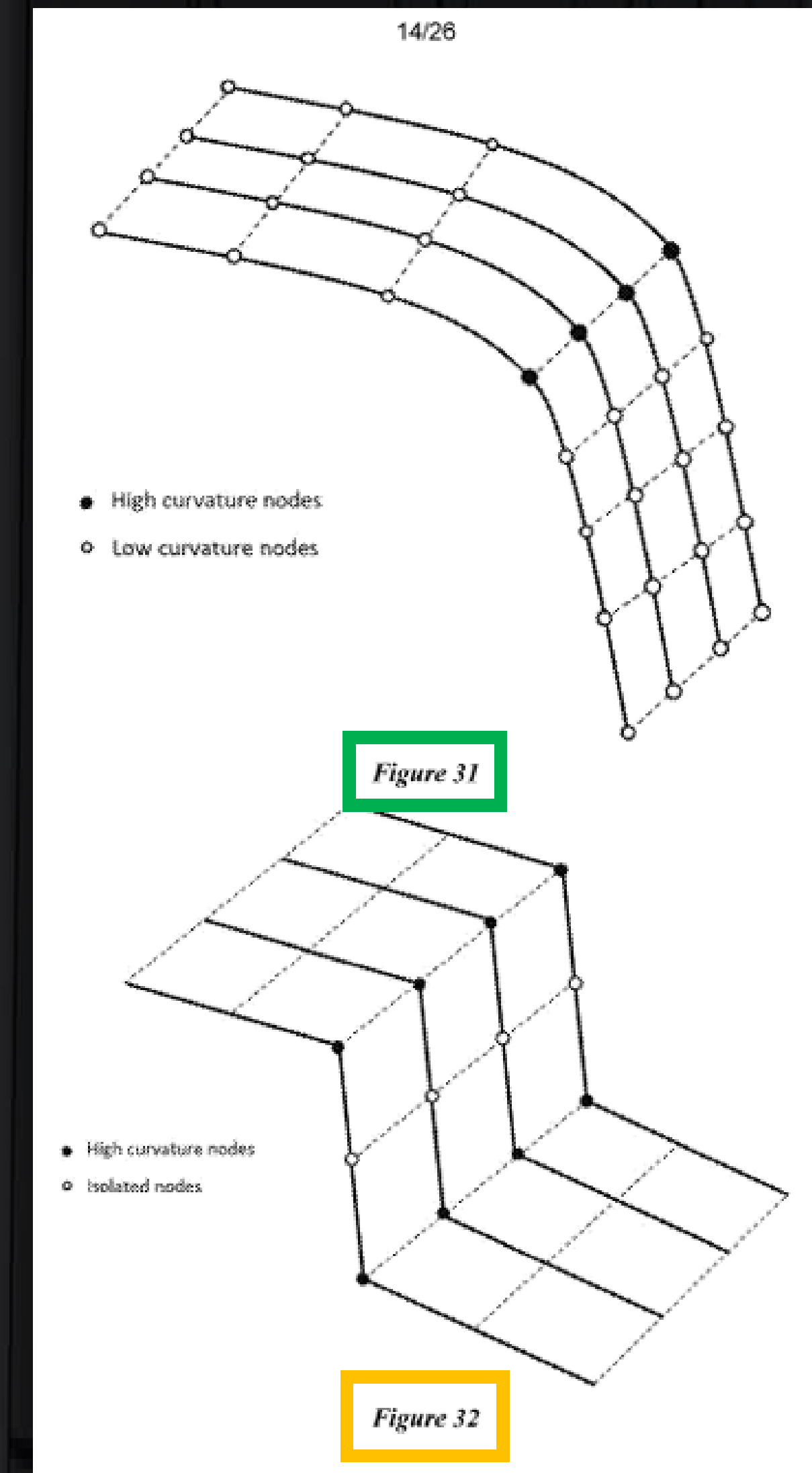
- Generally, correctly identified and labelled
- Some challenges when image boundaries are blurred or overlap

Tables

- Fully structured tables as per ST.96

Claims

- Complex due to self-referencing nature
- Some claims page formats challenging



Enhanced OCR stream



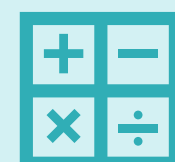
5. Summary

Benefits beyond MVP of tool choice + custom in-house development:

Chemical models
identified and
provided as
cropped images



Math formulas
identified and
provided as
cropped images



Structured tables



OCR quality
improvements



Post-POC architectural implementation

Beyond MVP



Request submitted to increase scope of project



Analysis and framework for back-capture to 1991



In-depth labelling of text



Other uses for Enhanced OCR service and structured data



Claim number detectables considering our recent fee review (based on number of claims)

Thank you





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Contact us



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