

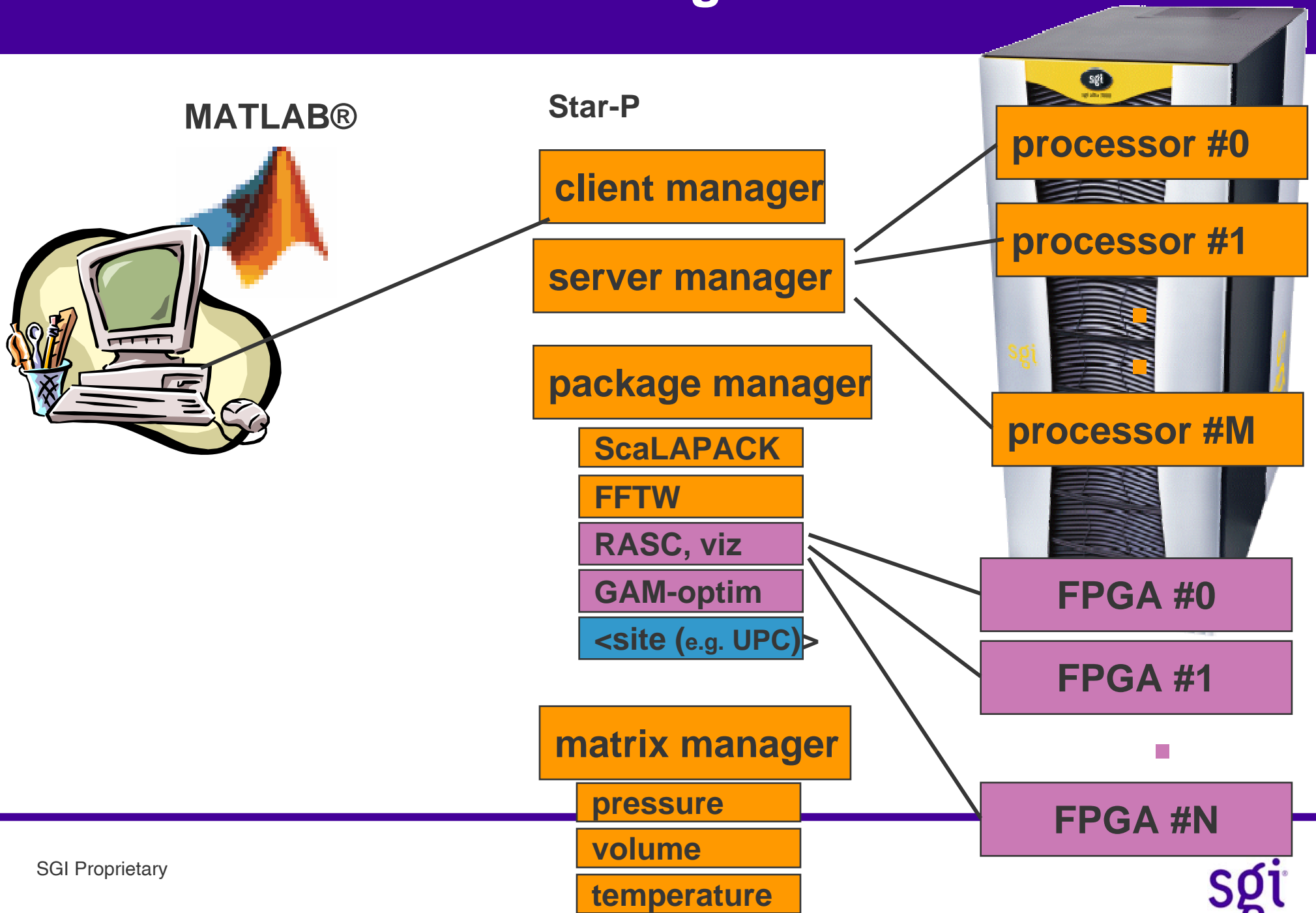
Silicon Graphics, Inc.

**Automatic Mapping of
MATLAB Code to Parallel
FPGAs on the SGI Altix**

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Star-P Architecture / Design Flow



Edge Detection Video Demo

```
function r = edge(imgs, fid, frames, height, width)
for i = 1:frames
    img = reshape(imgs(i, ), height, width);
    res = sobel(img, height, width);
    fwrite(fid, pp2matlab(res(2:height+1, 2:width+1)), 'double');
end;
r = 0;
```

```
function r = sobel(data, height, width)
K0 = fft2([-1 -2 -1; 0 0 0; 1 2 1] zeros(3, width - 1); zeros(height - 1, width + 2));
K1 = fft2([-1 0 1; -2 0 2; -1 0 1] zeros(3, width - 1); zeros(height - 1, width + 2));
img = fft2([data zeros(height, 2); zeros(2, width + 2)]);
g = ones(height + 2, width + 2).*127;
tmp0 = ifft2(img.*K0);
tmp1 = ifft2(img.*K1);
r = real(gt(sqrt(tmp0.^2 + tmp1.^2), g).*255);
```

