

\$100,000 out of the Window?

You cannot be serious!

Phil Hart
Systems Consultant

With acknowledgment to:

- **Screeentech (Aust) Pty Ltd**
- **Saab ITS Pty Ltd**

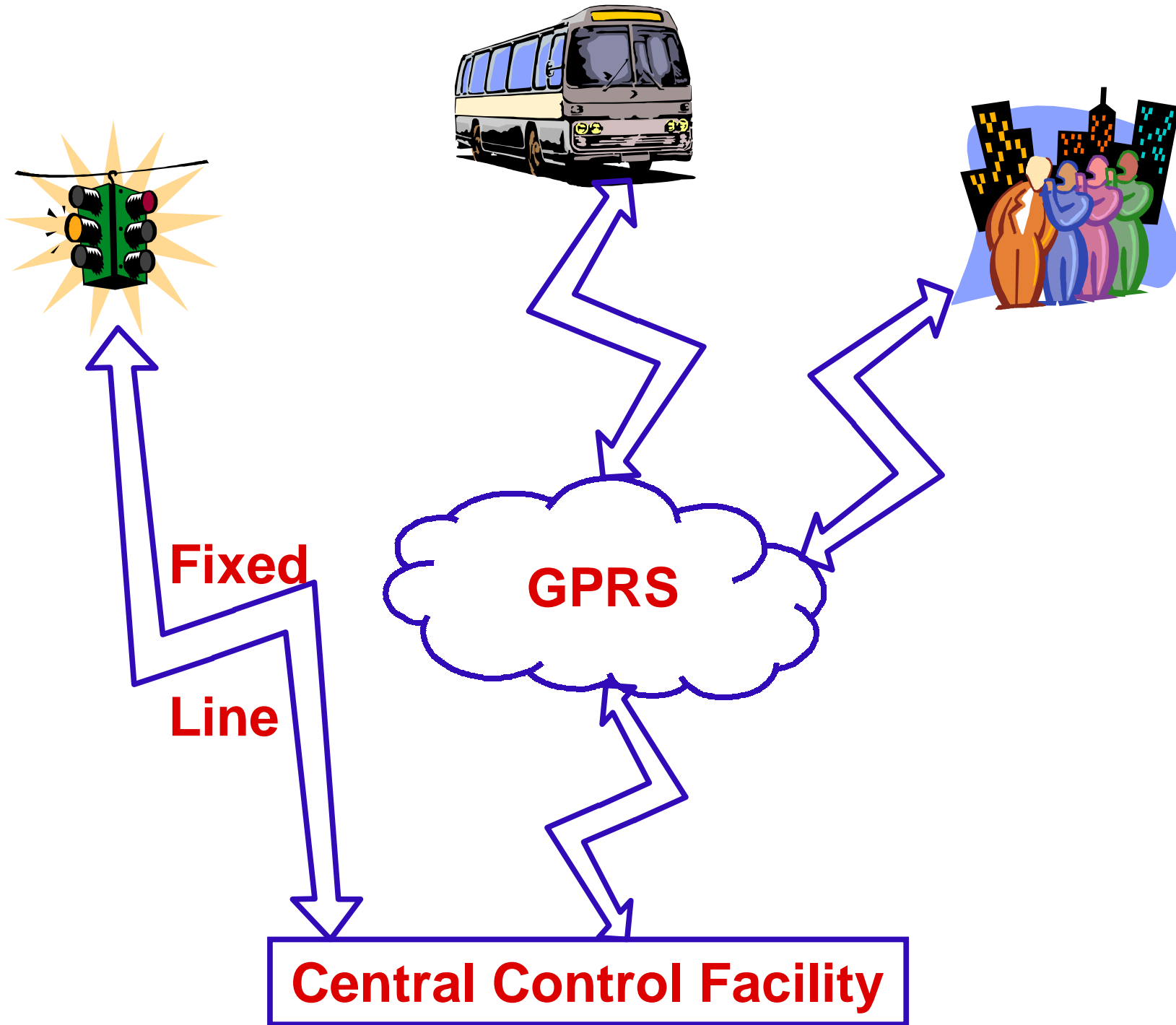
\$100,000 out of the Window?

You cannot be serious!

- **Scene setting for the project**
- **Design and implementation processes**
- **Analysis**
- **Impact on the business**
- **Possible future trends**
- **Conclusions**

BACKGROUND

- **City Council in New Zealand**
- **Prime contractor: Saab-ITS**
- **Screeentech sub-contracted to supply bus and street signage**
- **Information for bus passengers**
- **Linked to traffic lights**
- **First phase April 2002 to January 2003**



DESIGN PROCESS - 1

- **Single board computer**
- **Operating system** **Windows:**
- **Com port facilities?** ✓ **Yes**
- **TCP/IP stack?** ✓ **Yes**
- **Dialler?** ✓ **Yes**
- **Sound output?** ✓ **Yes**
- **VGA output?** ✓ **Yes**

DESIGN PROCESS - 2

- **Windows CE**
 - **Targeted at embedded systems**
 - **Customisable**
 - **Ease of cross-platform development**

DESIGN PROCESS - 3 WINDOWS CE

- **Lead time: 6 weeks**
- **Base price: \$(AU) 40,000**
- **Per-unit price: \$(AU) 60 (approx)**
- **1,000 units**
- **= far too long, and far too expensive**

DESIGN PROCESS - 4

- **Missed deadlines**
- **No repeat business**
- **What to do?**
- **Linux?**

DEVELOPMENT

- **Already half-written in C**
- **Porting into an unfamiliar environment**
- **GPRS – still relatively unknown**
- **Goal still achieved:**
 - ✓ **within budget**
 - ✓ **within timescale**
 - ✓ **to required standard**

TYPICAL REACTION

- **Switching mid-stream**
 - **Un-necessary delay**
- **Proliferation of vendors**
 - **No consistency**
 - **Impossible to support**
- **Whole project now bound to fail**

ANALYSIS

- **Factors for success**
- **Lessons learned**

FACTORS FOR SUCCESS

C

- ***C - lingua franca*** for this type of work
- **Cognisance of unspecified O/S**
- **Portability**
- **C++ discounted**

FACTORS FOR SUCCESS LINUX

- **Mature product**
- **Wide range of support**
 - **Unpaid**
 - **Professional**
- **Continuing to evolve**
- **Supported by a good file system: ext3**

FACTORS FOR SUCCESS LINUX EXPERT

- **Knows a lot about Linux fundamentals**
- **Knows a lot of support applications**
- **Knows a lot about rebuilding kernels**
- **Saved the team weeks of time**

FACTORS FOR SUCCESS COMPANY CULTURE

- **Lack of prejudice from the CEO**
- **Full support of technical staff by the CEO**

FACTORS FOR SUCCESS RANGE OF APPLICATIONS

- **Wide range of applications**
- **Applications for different environments**
- **Used:**
 - **bash**
 - **X-Windows**
 - **GNOME**
 - **wvdial**
 - **mc and mcedit**
 - **nano**
 - **pppd**
 - **sox**

FACTORS FOR SUCCESS CUSTOMISABLE KERNEL

- **Pick all the required modules & re-compile**
- **Allow 30 minutes**
- **Compare with 6 weeks**
- **Even at \$(AU)1,000/hour compare with
\$(AU)40,000**
- **No “per-unit” costs**

FACTORS FOR SUCCESS OPEN SOURCE - 1

- **Choice of distributions**
- **Fewer compatibility issues**
- **No service packs**
- **No increasingly onerous licensing issues**

FACTORS FOR SUCCESS

OPEN SOURCE - 2

- **Distributions used:**
 - **Red Hat 7.1 and 7.3**
 - **Debian 2.2**
 - **Knoppix 3.1**
- **None of “we will leave your computer disabled for 3 days while we generate a new product key for you”**

LESSONS LEARNED ECONOMICS

- **“Saved” \$(AU)100,000**
- **Spent money on Linux expert**
- **Net cost probably near original budget**

LESSONS LEARNED

STRESS!

- **What if my recommendation goes *wrong*?**
- **How do I get my head around *all this*?**

LESSONS LEARNED EXTRA TIME

- **Port took two weeks**
- **Would have taken 2 days for an expert**
- **Ignorance:**
 - **com ports**
 - **VGA output**
 - **different editor**

LESSONS LEARNED PERSONAL DEVELOPMENT

- **Benefited personally**
- **Learned a lot in a short time**
- **Heaps more yet to learn**
- **Learning curve might put some people off?**

IMPACT ON THE BUSINESS - 1

- **Fixed-cost contract**
- **Linux solution cost less**
- **Linux solution just as effective**
- **Direct impact on bottom line**

IMPACT ON THE BUSINESS - 2

- **Now O/S of choice for embedded**
- **Plans to use on all small-scale signs**
 - **in trains**
 - **in stations**
 - **on buses**
 - **street signage**
 - **in airports**

IMPACT ON THE BUSINESS - 3

- **Larger signs still using Windows**
 - **Race courses**
 - **Football stadia**
- **Economic case to switch does not exist**
- **Too much investment in existing software**

IMPACT ON THE BUSINESS - 4

- **Enriched the lives of two people**
- **Screeentech's stronger market position**
- **Maintaining Screeentech's competitive edge**

IMPACT ON THE BUSINESS - 5

- **Better budget planning**
- **Better cost control**
- **Better cash-flow forecasting**

IMPACT ON THE BUSINESS - 6

- **Screeentech runs mixed Windows/Linux**
- **Saab-ITS also runs a mixed environment**
- **Possibilities exist for exchanging documents in *other* than MS-Office format**
- **Cannot abandon MS-Office – too many other companies still use it**

POSSIBLE FUTURE TRENDS

- **Office desktop environment**
- **Other environments**

OFFICE DESKTOP ENVIRONMENT - 1

- **1970: “nobody got sacked for buying IBM”**
- **2003: “nobody gets sacked for buying MS”**
- **1980: proliferation of standalone applications – no integration**
 - **Lotus 123**
 - **Harvard Graphics**
 - **WordPerfect**
- **2000: how far can integration go?**

OFFICE DESKTOP ENVIRONMENT - 2

- **Has Office XP replaced Office 2000?**
- **Extra cost – marginal performance benefit**
- **“Must be submitted in *Word-97* format”**
- **End of the road for integration?**
- **Microsoft are diversifying – Xbox**

OFFICE DESKTOP ENVIRONMENT - 3

- **The future of MS-Office?**
 - **Consolidate? ... How?**
 - **Continue to enhance? ... How?**
- **Gap for other companies**
- **Target Windows? Or Linux? Or Both?**
 - **Depends upon future economics**

OFFICE DESKTOP ENVIRONMENT - 4

- **Will Microsoft go like IBM?**
- **Or vanish like Systime, Segundo Data Systems and ICL?**
- **Perhaps repeat of HP + Compaq:**
 - ***AOL-Time-Warner-Microsoft?***
- **Windows becomes more entertainment oriented**
- **MS tries to keep dominance**

OFFICE DESKTOP ENVIRONMENT HURDLES FOR LINUX

- **Level of technical expertise must keep falling**
- **Cost savings must become more apparent:**
 - **The herd effect**
 - **Perceived levels of risk**
- **A new rival O/S?**

OTHER ENVIRONMENTS

- **Decision makers less “blinkered”**
- **Wider range of exchange formats available**
 - **Word-97 format is not a monopoly**
 - **Other formats can be agreed**
- **Standalone systems: no exchange needed**

LINUX TO OVERTAKE WINDOWS? SUMMARY PREDICTIONS

- **Office desktop environments:**
 - **Will take a while yet**
- **Other environments:**
 - **Will happen rather sooner**

CONCLUSION

- **The right tool for the job**
- **Drive across the Nullarbor ...**
 - **Old Mini Cooper w/o air con?**
 - **4-berth campervan with air con?**
- **Weekly shopping ...**
 - **Small city car?**
 - **“Palace on wheels”?**
- **Same comment for Windows and Linux**
- **More dual-O/S companies in future**

? ? ? ? ? ? ? ? ? ?
? ? ? ? ? ? ? ? ? ?
? ? ? **Any questions?** ? ?
? ? ? ? ? ? ? ? ? ?
? ? ? ? ? ? ? ? ? ?