



Solw'IT

Let's
Solve
It

services and solutions building customers' innovation

passion, experience and advanced technologies

*MYTHS AND TRUTHS
ABOUT CHOOSING YOUR SOFTWARE PARTNER*

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Business Development Manager*



Myth 1

CHOSING YOUR SOFTWARE PARTNER IS LIKE PLAYING LOTTERY!



THE REALITY: PUSH YOUR LUCK!

HOW STEFAN MANDEL GAMED THE LOTTERY 14 TIMES

Let's assume a lottery required Mandel to pick 6 numbers between 1 and 40. Here's what he'd do:



1. Calculate the number of **total possible combinations** using a simple factorial formula:

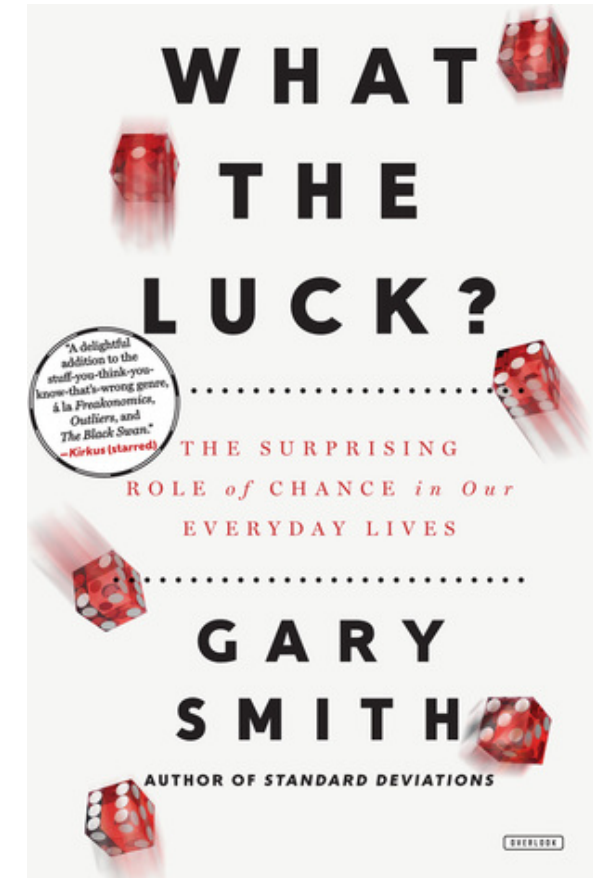
$$\frac{40!}{6!(40-6)!} = 3,838,380 \text{ total combinations}$$

2. Identify lotteries where the **jackpot is at least 3x** the number of combinations (let's say \$10,000,000)
3. **Raise money** to pay for every single combination (\$3,838,380, at \$1 per ticket)
4. Use an algorithm and computers to **print out millions of tickets** with every combination →
5. **Deliver the tickets** (and pay for them) at hundreds of authorized lotto dealers
6. **PROFIT** (after taxes, and paying investors)



the **HUSTLE**

Luck is systematic



A problem has been detected and Windows has been shut down to prevent damage to your computer.

DRIVER_IRQL_NOT_LESS_THAN_OR_EQUAL_TO

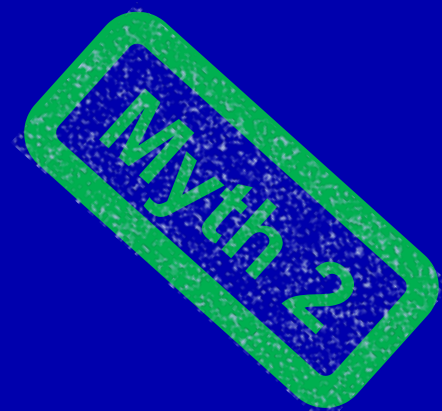
If this is the first time you've seen this Stop error screen, restart your computer. If this screen appears again, follow these steps:

Check to make sure any new hardware or software is properly installed. If this is a new installation, ask your hardware or software manufacturer for any Windows updates you might need.

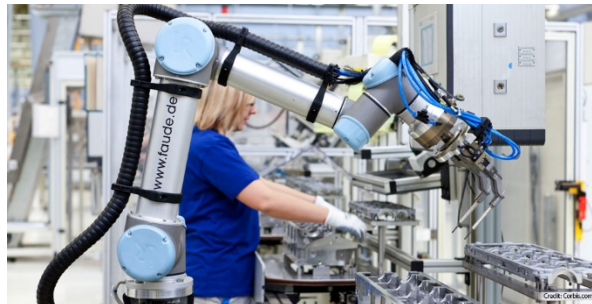
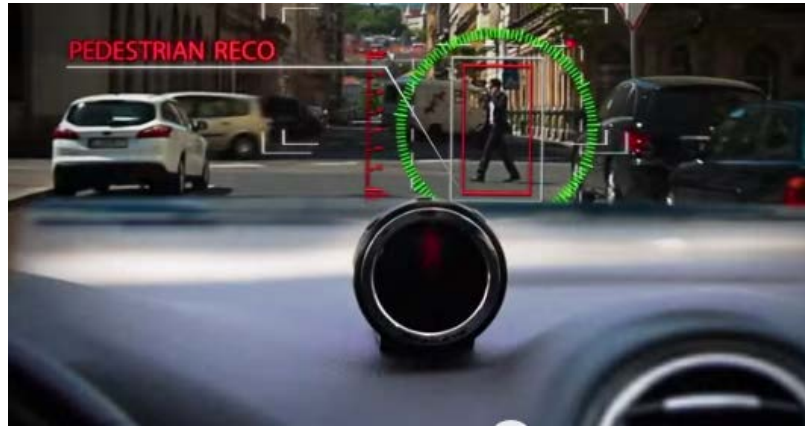
If problems continue, disable or remove any newly installed hardware or software. Disable BIOS memory options such as caching or shadowing. If you need to use Safe Mode to remove or disable components, restart your computer, press F8 to select Advanced Startup options, and then select Safe Mode.

Technical information:

*** STOP: 0x000000D1 (0x00000000, 0x00000000)



THE SOFTWARE REALITY... HUMAN LIVES DEPEND ON SOFTWARE QUALITY



Google Home

google.com/home





Myth 3

ABOUT THE QUALITY MYTH...



BEST QUALITY



MADE IN GERMANY





- Poland currently ranks 5th globally in a ranking published by Topcoder – a crowdsourcing platform which consists of more than one million of the world's top developers, designers, algorithmists and data scientists – is another demonstration of the country's acknowledged leadership in the IT sector.
- The Polish outsourcing industry has been growing in the past over 20 years at an annual growth of 20%
- Poland has been placed in Ernst & Young's 2016 ranking **1st most attractive European destination** in terms of outsourcing software development in Europe.

Which Country Has the Best Developers?

Ranked by Average Score Across All HackerRank Challenges

| Rank | Country | Score Index | Rank | Country | Score Index |
|------|----------------|-------------|------|----------------|-------------|
| 1 | China | 100.0 | 26 | Netherlands | 78.9 |
| 2 | Russia | 99.9 | 27 | Chile | 78.4 |
| 3 | Poland | 98.0 | 28 | United States | 78.0 |
| 4 | Switzerland | 97.9 | 29 | United Kingdom | 77.7 |
| 5 | Hungary | 93.9 | 30 | Turkey | 77.5 |
| 6 | Japan | 92.1 | 31 | India | 76.0 |
| 7 | Taiwan | 91.2 | 32 | Ireland | 75.9 |
| 8 | France | 91.2 | 33 | Mexico | 75.7 |
| 9 | Czech Republic | 90.7 | 34 | Denmark | 75.6 |
| 10 | Italy | 90.2 | 35 | Israel | 74.8 |
| 11 | Ukraine | 88.7 | 36 | Norway | 74.6 |
| 12 | Bulgaria | 87.2 | 37 | Portugal | 74.2 |
| 13 | Singapore | 87.1 | 38 | Brazil | 73.4 |
| 14 | Germany | 84.3 | 39 | Argentina | 72.1 |
| 15 | Finland | 84.3 | 40 | Indonesia | 71.8 |
| 16 | Belgium | 84.1 | 41 | New Zealand | 71.6 |
| 17 | Hong Kong | 83.6 | 42 | Egypt | 69.3 |
| 18 | Spain | 83.4 | 43 | South Africa | 68.3 |
| 19 | Australia | 83.2 | 44 | Bangladesh | 67.8 |
| 20 | Romania | 81.9 | 45 | Colombia | 66.0 |
| 21 | Canada | 81.7 | 46 | Philippines | 63.8 |
| 22 | South Korea | 81.7 | 47 | Malaysia | 61.8 |
| 23 | Vietnam | 81.1 | 48 | Nigeria | 61.3 |
| 24 | Greece | 80.8 | 49 | Sri Lanka | 60.4 |
| 25 | Sweden | 79.9 | 50 | Pakistan | 57.4 |



Language/ cultural closeness



Education



Stability/confidentiality (EU laws).



Cost



Quality



Myth 4

THE „GENIUS IN THE GARAGE”

Solw'IT Let's Solve It



THE REALITY OF SUCCESSFUL PROJECT

CRITICAL SIZE



LOW ATTRITION RATE



WORK ORGANISATION



TESTING



DOCUMENTATION
DOCUMENTATION

DOCUMENTATION





Myth 5

"NO PROBLEM, WE HAVE ALREADY DONE IT - 4 TIMES"



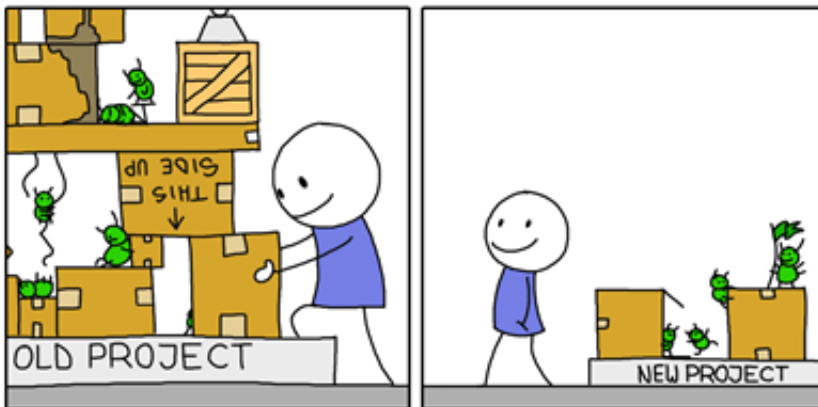
Ariane - 5



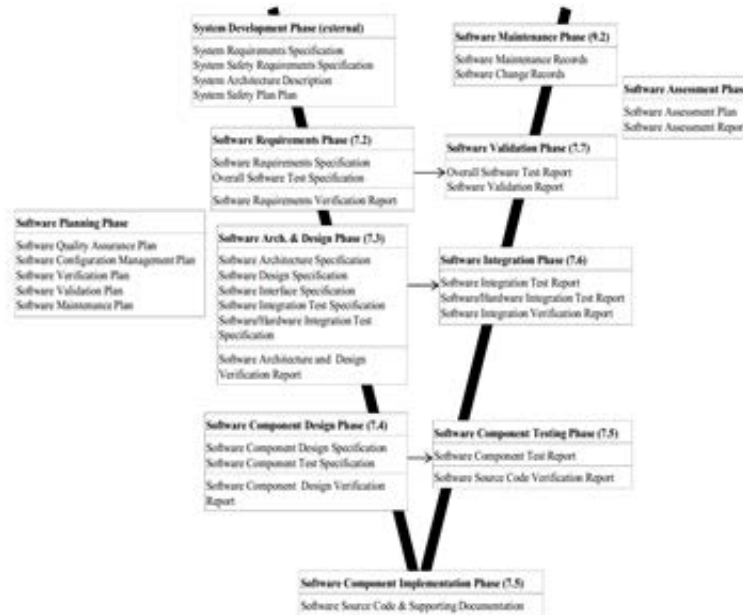
THE SOUP REALITY: DOCUMENTATION AND TESTING

SOUP: Software Of Unknown Provenance

CODE REUSE



MONKEYUSER.COM



NORMS:

- IEC 61508: General safety-critical system
- IEC 62304: Medical
- ISO 26262: automotive
- IEC 61513: Atomic Central
- EN 50128: Train industry
- DO-178C: Aeronautic industry
- NASA Safety Critical Guidelines

SANITY CHECK:

- RAM Test
- Non-volatile memory tests
- CPU tests - registers and instructions
- Power tests
- Sensor tests
- Watchdog



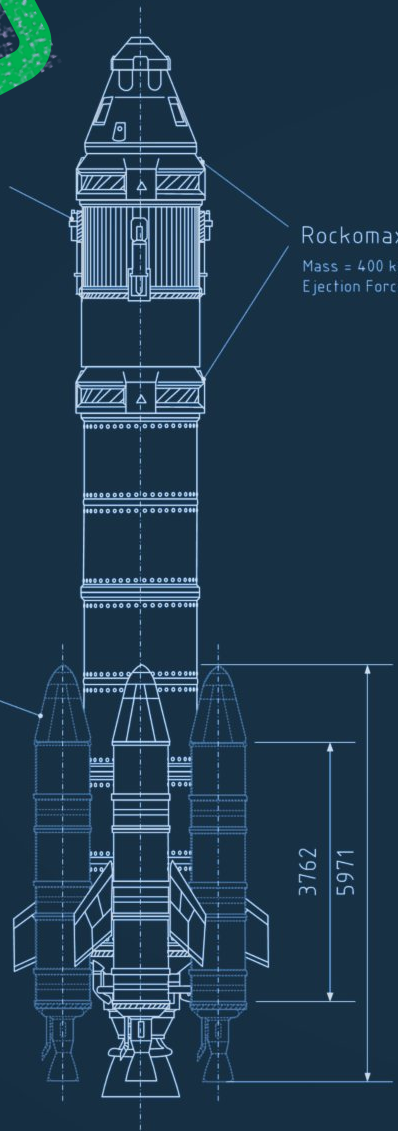
| Stage | TWR (K) | Δv (atm) | Time |
|----------------------------|---------|------------------|--------|
| 1 | 2.10 | 279 m/s | 12.9 s |
| 2 | 2.07 | 322 m/s | 15.0 s |
| 3 | 2.04 | 380 m/s | 17.8 s |
| Total Δv : 981 m/s | | | |

| Stage | TWR (K) | Δv (vac) | Time |
|-------|---------|------------------|---------|
| 4 | 1.98 | 3155 m/s | 143.6 s |
| 5 | --- | --- | --- |

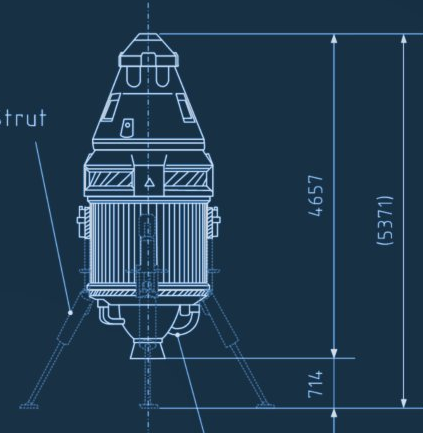
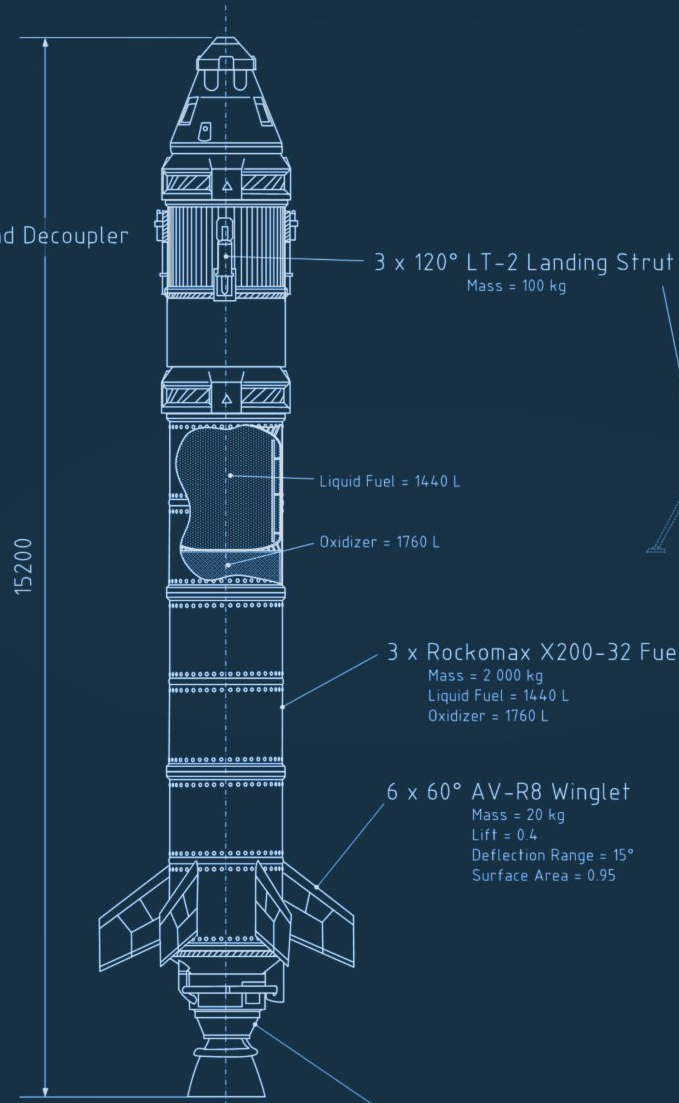
| Stage | TWR (K) | Δv (vac) | Time |
|-------|---------|------------------|---------|
| 6 | 1.35 | 2523 m/s | 219.1 s |
| 7 | --- | --- | --- |

| Stage | TWR (K) | Δv (vac) | Time |
|-------|---------|------------------|------|
| 8 | --- | --- | --- |

MY APPLICATION IS NOT ROCKET SCIENCE!!



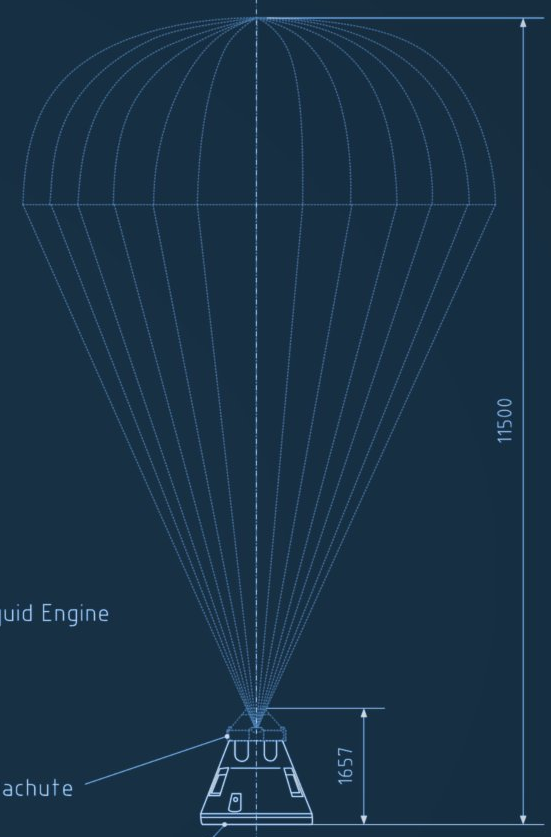
Rockomax Brand Decoupler
 Mass = 400 kg
 Ejection Force = 250



Rockomax „Poodle“ Liquid Engine
 Mass = 2 500 kg
 Thrust = 220 000 N
 Isp (vac) = 390 s

Mk16-XL Parachute
 Mass = 300 kg
 Drag
 - Stowed = 0.22
 - Semi-Deployed = 1
 - Deployed = 500

Mk1-2 Command Pod
 Mass = 4 000 kg
 Required Crew = 3



Rockomax „Mainsail“ Liquid Engine
 Mass = 6 000 kg
 Thrust = 1500 000 N
 Isp (atm) = 280 s
 Isp (vac) = 330 s

Total Δv (atm) = 5 404 m/s
 Total Δv (vac) = 6 826 m/s
 Total Mass = 131 390 kg
 Part Count = 78
 Total Cost = 64 820 m

KERBAL X

The Kerbal X is one of the most successful rockets that can be ordered from a catalog. Despite the original design having been meant for a plastic model, it's proved itself quite dependable as a full-sized craft.

The X is capable of achieving orbit around Kerbin, and even features a very optimistic set of landing legs on its upper stage.

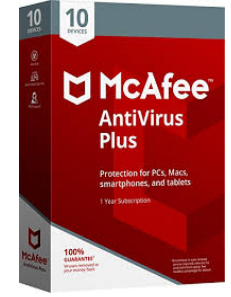
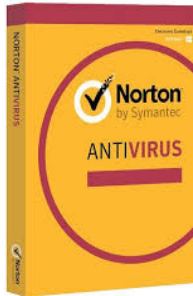
TRUTH: WHO CAN DO MORE CAN DO LESS



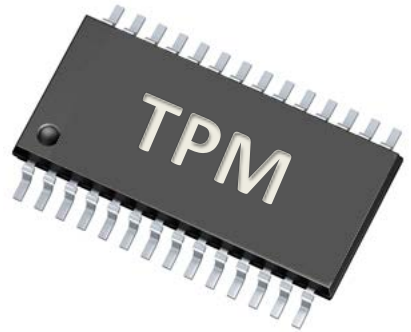


Myth 7

SECURITY IS HARDWARE WITH A SECURITY LAYER



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TRUTH: SECURITY BY DESIGN AT EVERY STAGE OF THE DEVELOPMENT

Security at every stage of the development

Security should be implemented in every Software module

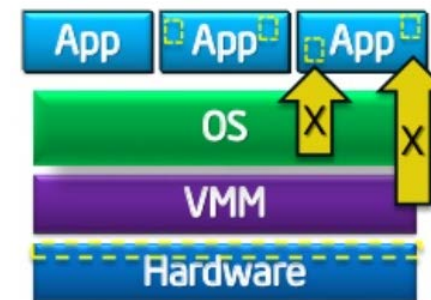
Software should leverage the hardware that will be used (ie reducing attack perimeter by using Intel SGX on Intel CPU)

SGX Technical Summary

- Provides any application the ability to keep a secret
 - Provide capability using new processor instructions
 - Application can support multiple enclaves
- Provides integrity and confidentiality
 - Resists hardware attacks
 - Prevent software access, including privileged software and SMM
- Applications run within OS environment
 - Low learning curve for application developers
 - Open to all developers
- Resources managed by SW
 - HW components are supported in a driver or OS



Attack surface with Intel® SGX



Attack Surface

SOFTWARE IS A COMMODITY

The Ultimate Myth!!!



TRUTH: SOFTWARE CAN NOT BECOME A COMMODITY



Commodity Death Spiral



The cost of a safety-critical project is 10x greater than in the case of a regular project

Questions?

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